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January 25th.

Vice-President **Bridges** in the Chair.

Forty-six members present.

The Report of Proceedings of the Biological Department for the present month was read.

On report of the respective committees, the following papers were ordered to be printed in the Proceedings.

Description of two New Species of Tortoises.

BY JOHN LE CONTE.

Kinosternum Henrici.—Testa regulari-ovali, convexa, dorso subcarinato, postice valde decliva, margine non dispanso, laterali perpendiculari, sterno testam non omnino occludente, cauda longa, unguiculata.

Habitat New Mexico.

Head and neck dusky, on the top slightly varied with paler, beneath and on the sides, including the jaws, thickly speckled with yellow. Upper jaw entire, hooked. Chin with two small warts. Legs and tail dusky, fore feet with two folds on the upper side; hind legs squamous on the hinder side and likewise with two folds; tail black and rather long, furnished with a long, broad and rather pointed nail. Shell brownish yellow, regularly elliptic, convex, very declivous behind, with the remains of an evident keel on the three last scutæ, anterior and posterior margins not expanded, the lateral perpendicular with a considerable furrow for the greatest part of its length. Vertebral scutæ imbricate, the first one triangular with the apex truncate, applied to the nuchal and first marginal scuta, second, third and fourth urceolate, six-sided, the lower side of the fourth very short, the fifth triangular with all the angles truncate, so as to form a six-sided figure, of which the apical side is very short, the two upper lateral sides long and incurved, the two lower lateral short and perpendicular to the base which is doubly incurved so as to form a waving line; this scuta is applied to the two caudal marginals, the first lateral is irregularly four-sided, the second and third five-sided, the fourth four-sided, the anterior side straight, the superior oblique, the posterior curved first outward and then inward, so as to fit into the sides of the fifth vertebral and the last marginal; the nuchal scuta is small and square; the rest of the marginals except the last one, the caudals being excluded, are oblong, more or less angled on the top; the last one is larger than the rest, three-sided, pointed above and entering a cavity between the last vertebral and the last lateral; the base is straight and the two sides curved; the caudals are four-sided, the upper side curved. Sternum large and yellow, emarginate behind, jointed before by a ligament, behind by a suture anteriorly closing up the box of the shell, posteriorly very partially so; gular scuta very large, triangular, pectorals irregularly four-sided, the outer side a little wider than the inner, the lower side curved, the interior anterior angle very obtuse, the interior posterior rather acute, the two exterior right; brachials triangular with the apex truncate, and the upper side incurved; abdominals quadrangular, the membrane joining them with the femorals so wide as to make the joint appear double, femorals quadrangular, the inner side short, caudals right angled triangular.

Length of the shell 4·7 inches, height 1·9, of head and neck 2·8, of the tail 2.

This new tortoise was brought from New Mexico by Dr. T. C. Henry of the United States Army, and by him through Mr. Cassin presented to the Academy. It is an old individual. It appears that when young the scutæ of the back are marked with concentric striæ, and no doubt the whole of the upper surface varied in some degree with darker. When the *K. odoratum* is found in clear water streams it is beautifully varied, thus, for instance, those found in the Ogeechee river, in Georgia, which has a sandy bottom and is seldom or never polluted with mud, they are marked on each scuta with diverging or radiating lines of darker.

I have not adopted Mr. Agassiz's name in describing this animal, as I do not think that his arrangement of *Kinosternoids* founded on a proper basis. If I were to adopt his classification, I should describe three of his genera as follows, premising that I think it is offering a violence to nature to separate the two first.

KINOSTERNUM.

Sternum entirely closing up the box of the shell, with eleven scutæ and eight bones, there being no entosternal, but the whole piece may be divided longitudinally from front to rear into two pieces, which are afterwards subdivided. The sternum is bilobed, each lobe moveable from the side of the abdominals on the posterior joint of the hyosternals and the anterior of the hyosternal bones. By closing the two lobes it is enabled to cover entirely the head and limbs; the posterior lobe being as wide as any part of the sternum, there can be of course but very small wings by which it is attached to the carapace. In fact they are scarcely perceptible. The upper jaw is most frequently hooked and the tail armed with a nail.

THYROSTERNUM.

This genus differs from the preceding in the shape and mode of attachment of the sternum to the carapace, the number of bones and of scutæ is the same, but the wings are much longer; it has likewise two moveable lobes, the anterior attached by suture at the sides and by ligament in the centre; the posterior one entirely by suture, both of them narrower than the opening of the carapace, particularly the posterior one; consequently the animal is not able to withdraw its softer parts entirely from view. It is always emarginate behind, the upper jaw is almost always hooked, and the tail generally armed with a nail. The transitus from *Kinosternum* to *Thyrosternum* is so perfect, that it becomes difficult in some instances to say to which genus a specimen belongs.

OZOTHECA.

Sternum very much shorter and narrower than in the other two genera, constituted in the same manner, but the gular plate is generally very small. It is jointed like the others both before and behind. The upper lobe is quite moveable, but the lower little so, inasmuch as the fourth scuta projects somewhat beyond the suture connecting this part with the abdominals, but there is a wide space above it filled with ligamentous matter, which allows of some degree of motion. This joint early in life becomes immoveable. The anterior joint in old animals is apt to become permanently soldered to the adjoining bone. The wings are longer and narrower than in the others.

The following characteristics are common to all these three genera. The chin is furnished with two or more small warts, and the feet have some folds or large scales, the fore feet on the anterior side, the hind feet on the posterior. They all have a strong musky odor.

Although it may appear perfectly proper to separate the last genus from the two others, yet in Wagler's *K. hirtipes* a very near approach is made to *Ozotheca*, it has a very narrow sternum, emarginate behind and the branchial plate is quadrangular, very much resembling what we see in *O. odorata*, the jugular scuta is large and triangular, the upper jaw hooked, and the tail ungiculate; in these three particulars exactly like the *T. Pennsylvanicum*. In the young of the *O. odorata* it is impossible to distinguish the sternum from that of the *T. Pennsylvanicum*, except by the form of the brachial scuta; it is very remarkable, however, that the first which in the adult state has the nuchal scuta small and irregular in shape, when very young has it very large and perfectly triangular. The most of the *Kinosterna* and *Thyrosterna* have the tail armed with a nail. Whether any of the *Ozothecæ* are thus furnished I do not know, never having had an opportunity of examining more than two species (unless Wagler's *K. hirtipes* is admitted to be one). Should one, however, be found perfectly agreeing in every respect with the *O. odorata*, with the tail unguiculate, I would not hesitate to say at once, that my learned friend's division was unnatural. In all species that I have seen, except those brought from Mexico by Mr. Pease, the posterior lobe of the sternum is emarginate behind, and is but slightly moveable ; in the Mexican species, on the contrary, it is entire and capable of entirely closing up the box of the shell ; in both cases the faculty arises from the peculiar formation of the joint, being either sutural or ligamentous.

The following is the distribution according to Mr. Agassiz's system of such *Kinosternoids* as I have had an opportunity of examining.

KINOSTERNUM.

Mexicanum, integrum, triliratum.

THYROSTERNUM.

Scorpioides, leucostomum, longe caudatum, pennsylvanicum, sonoriense and Henrici.

OZOTHECA.

Odorata, guttata, hirtipes ?

The animal, the description of which follows, was somehow omitted in my monograph in vol. vii. Proc. A. N. S.; it differs remarkably from others of Mr. Agassiz's genus *Kinosternum*, in having the upper jaw not hooked, and the tail not unguiculate.

K. TRILIRATUM.—Head and neck above spotted with yellow, the spots on the cheeks larger, beneath yellowish irregularly varied with dusky, jaws yellow varied with black, the upper entire, not hooked. Chin with four small warts. Fore legs above dusky, beneath yellowish brown with three plicæ or large scales ; hind legs cinereous brown with four large scales near the heel. Tail short, black, pointed, without a nail at the end. Shell regularly oval, brown, very convex, strongly tricarinate on the back, very declivous on the sides, the outer edge of the margin sharp and projecting, the scutæ with more or less concentric striæ, and others radiating from behind. Vertebral scutæ elongated, imbricate, emarginate behind, the first triangular with the apex somewhat truncate and the base angled, applied to the nuchal and first marginal only, the second, third and fourth hexagonal, the anterior and posterior sides very short, the fourth with the two lower sides much shorter than the upper, the fifth triangular with the apex truncate and the base a little angled ; the first lateral is four-sided, the lower side with four facets, second and third pentagonal, fourth irregularly five-sided ; the nuchal scuta is wider at the base, the rest of the marginals square and oblong, increasing in size to the extremity of the shell : sternum yellow, varied with black, entire and rather pointed behind, bivalved, completely closing up the box of the shell, wings very short, applied partially to the fourth and entirely to the fifth, sixth and seventh marginal scutæ, all the scutæ of the sternum are concentrically striate ; the gular large, triangular, pectorals irregularly four-sided, the anterior side curved, brachials triangular with the apices truncate and the base rounded, caudals right angled triangular ; inguinal scuta long, rather wide, joining the axillary.

Length of the shell 5 inches, height 2·5, tail ·8. Brought from Mexico by Mr. Pease.

I conclude by observing that Mr. Agassiz thinks my *K. Mexicanum* is the same as Mr. Bell's *K. Shavianum.* The author last named supposed that he possessed the identical specimen from which Dr. Shaw made his figure. There can be no doubt that Dr. Shaw's figure represents my *K. Mexicanum*, although the shell is represented without a nuchal and without caudal marginals. Mr. Bell's species has the sternum narrower than the shell, and emarginate behind ; it undoubtedly belongs to the *scorpioides.* In the seventh volume of Proc. A. N. S., in my description of this species, it is said that the sternum is entire ; it is really shallowly emarginate. They both belong to the genus *Thyrosternum.* Mr. Agassiz likewise thinks that my *Emys concinna* and Dr. Holbrook's *E. Floridana* are the same. My friend will pardon me when I say, that he probably has not had an opportunity of examining my species. There is no specimen in the collection of the Academy which I can recognise as the animal once described by me. These two species are by no means alike. The *E. concinna* is most beautifully smooth, nothing can be more so; the *E. Floridana* is extremely rough with longitudinal rugæ, it is besides sometimes three times the size of the other, and the marks on the head and neck are entirely different. According to this excellent naturalist the *K. longicaudatum* and *K. brevicaudatum* of Spix, form but one species. They differ, however ; the first has the sternum sharply emarginate behind, and the brachial scuta is narrow, triangular and very much truncate at the apex. In the other the sternum is bluntly emarginate behind and the brachial perfectly and acutely triangular. Mr. Bell's *scorpioides* is not the animal described so long ago under that name, as the want of the caudal nail sufficiently shews ; the specific name of this tortoise was given it on account of that appendage. Neither is it the *K. brevicaudatum* nor the *longicaudatum* of Spix. This author thinks that the female tortoises have long and the males short tails ; it is just the reverse.

When my son was in Honduras, he obtained a species of tortoise much larger than any that we have seen in the United States. The shell was nearly two feet long; unfortunately this was afterwards destroyed, but the head and limbs having been put into a jar of alcohol reached here in safety. In order to keep alive the remembrance of this animal and to induce others to look for it, I add a description of the head and tail, the only parts to which I can have access at present, premising that it belongs to the genus *Emys* (Ptychemys Agass.) and has the jaws serrate in the same manner as the *E. mobiliensis.*

EMYS VALIDA.—Head and neck above dusky inclining to brown, striped with yellow, the stripes on the top very few, on the sides very numerous, one of them running from the middle of the orbit to the back part of the neck, widens considerably after it passes the superior part of the cheek; beneath yellow with numerous lines of dusky; nose and jaws striped with yellow, jaws serrate, the lower one hooked, the upper emarginate. Tail dusky with two yellow lines on the top and three on the under side, the outer one of which on each side branches off in such a manner as to surround the vent, above which it crosses the tail transversely. Head 4 inches long, tail 3 inches.

Sixty years ago, in the Tammany Museum in New York, there was the shell of an *Emys* three feet long ; it had been used by an Indian as a shield and had varied devices painted on it; it was said to come from Lake Erie. Nothing like this has since been seen, but I am told that in the head waters of the Mississippi tortoises of an immense size and in great quantity have been observed.

Since writing the above, Prof. Baird has called my attention to the Atlantic Journal of Mr. Rafinesque, where there are some remarks on the tortoises of the United States. This author names the *Testudo Carolina*, the *Kerobates* of Agassiz, *Gopherus;* his *Cheliphus* appears to be the true *Kinosternum* Agassiz, the *Uronyx* the *Thyrosternum* of the same ; *Didicla* is the *Cistudo*, *Chelopus* is *Nanemys* and *Cheliurus* is the *Chelydra.*

Although it has become customary to pay no attention to any thing published by this very indefatigable explorer of the productions of our country, I do not think it right when a genus or a species has been announced as suggested or discovered by him, to pass it over without notice. From an unfortunate shipwreck in which he lost every thing that he possessed in the world, he became disordered in his intellect. Notwithstanding his propensity for seeing differences which were not apparent to others, many of his observations are truly valuable, and no naturalist should think his labors perfect unless he has searched through the many publications of this unfortunate naturalist, and discovered whether or no he had been anticipated by him. No one seems ever to have looked for his *Opalone*, a soft shelled tortoise with five nails, found in the upper branches of the Hudson River.

Geological Explorations in Kansas Territory.

BY F. B. MEEK and F. V. HAYDEN.

As it is merely our purpose, on the present occasion, to give rather briefly, the results of some geological examinations made by us last summer in eastern Kansas, it will perhaps scarcely be expected that we should here enter into a historical review of the valuable labors of other explorers in that region. Hence we proceed at once to present such facts as came under our observation, and the conclusions they seem to warrant.

The route pursued by us while making these investigations, was first from Leavenworth city on the Missouri, accross the country to Indianola, near the mouth of Soldier creek, on the Kansas; thence up the north side of Kansas and and Smoky Hill rivers, to the mouth of Solomon's fork. Here we crossed the Smoky Hill, and followed it up on the south side to a point near the ninety-eighth degree of west longitude; from which point we struck across the country in a south east direction to the Santa Fe road, which we followed north eastward to the head of Cottonwood creek. Leaving the road here, we went down the Cottonwood valley some thirty miles, when we turned across the country nearly due northward to Council Grove. From the latter place we followed the Santa Fe road back southwestward about twenty-four miles to a watering place known as "Lost Spring;" here we again left the road and struck across the country in a northwest direction to Smoky Hill river, at a point nearly opposite the mouth of Solomon's fork. We then traveled down the south side of Smoky Hill and Kansas rivers to Lawrence, where we crossed the Kansas and proceeded in a northeast direction back to Leavenworth city.

The first outcrop of rocks examined by us during the expedition is at a point just below the steamboat landing at Leavenworth city. At this place and for some distance above on the river, the formation is well known to belong to the upper, but not the highest portions, of the great western coal measures.

The section here near the Leavenworth landing, presents the following beds, in descending order:

	Feet.
1. Bluish gray clay, exposing a thickness of about	3
2. Hard gray layer of *Fusulina* limestone	1¼
3. Yellow laminated clay	7
4. Hard gray argillaceous limestone with *Fasulina*	1
5. Gray fine grained argillaceous sandstone with fucoidal markings, sometimes contains seams of limestone	1 to 3
6. Gray, green and blue, rather indurated clay, with sometimes near the base many compact concretions limestone	2
7. Hard light yellowish gray limestone, usually of bluish tinge far in beyond the effects of weathering. Contains *Spirifer cameratus*, *S. Kentuckensis*, *S. lineatus*, *Spirigera subtilita*, *Orthisina Missouriensis*, *Productus splendens?* *P. semireticulatus?* *P. pustulosus* and *Fusulina cylindrica*, together with colums of *Crinoids*, and spines and plates of *Archæocidaris*; also jaws teeth of *Xystrăcanthus arcuatus*	15
8. Dark shale, passing up into gray less distinctly laminated clay	5
9. Hard dark bluish impure limestone, containing *Fusulina cylindrica*, *Spirigera subtilita*, *Productus Rogersi*, *P. Prattenianus*, *Arca carbonaria?* an undetermined *Monotis*, *Allorisma? Leavenworthensis*, *A. subcuneata*, *Myalina subquadrata*, *Leptodomus granosus*, and a large *Belerophon*	1½–2
10. Gray, more or less laminated clay, becoming darker near the upper part, rising above the river	11

Attached to the surfaces of bed No. 9 there is usually from one to two inches of soft dark argillo-calcareous matter containing great numbers of *Orthisina crassa*, with the undetermined species of *Pecten*, *Mytilus*, *Schizodus*, *Pleurotomaria*, &c.

All this section above No. 7 appears to vary considerably, at different places some of the beds, being entirely wanting, or presenting quite different lithological characters at other localities not far from here. Owing to the dip of the strata, and partly to the fall of the river, the bed of limestone No. 7, which is elevated eighteen feet above the river where this section was taken, rises as much as twenty-five feet above the level of the river, at a distance of one mile or less below; and on following the outcrop of these rocks along the shore above Leavenworth city, they were found to sink gradually beneath the water, so that at Fort Leavenworth landing, two miles above, (in a north direction from the exposure first examined) all of beds No. 8, 9 and 10, as well as two or three feet of No. 7, were submerged. Should this dip continue at the same rate, without local undulations, the whole of No. 7 must pass beneath the river in less than two miles above the Fort.

Immediately above No. 1 of this section, we saw no exposures of rock in place, but on a small stream about two and a half miles below Leavenworth city, and perhaps one and a half miles back from the river, there is an outcrop of soft fine grained yellow sandstone, showing a thickness of twenty-four feet, underlaid by a bed of blue clay of which a thickness of about four feet was exposed. We had no opportunity to determine the elevation of these beds above the river with sufficient accuracy to form a definite conclusion whether or not they hold a position above the section seen near the Leavenworth landing, though we incline to the opinion that they come in above it.

In ascending the hills back of Leavenworth city we observed no outcrops of rock along the slopes, until near the summit, where at an (estimated) elevation of about two hundred feet above the highest bed of the section at the river, there is an exposure of hard bluish-gray impure limestone, weathering to a yellowish tinge, the beds of which are separated at places, by partings of clay. Of this rock we saw a thickness of sixteen feet. It is much used for building purposes and quarried rather extensively back of Fort Leavenworth .At one of these quarries, amongst the loose material thrown out by the workmen we found specimens of *Spirifer cameratus*, *S. Kentuckensis*, *S. planoconvexa*, *S. hemiplicata*, *Spirigera subtilita*, *Productus semireticulatus*, *P. Norwoodi*, *Leptodomus Topekaensis*, *Fusulina cylindrica*, *Terebratula millepunctata*, and fragments of *Crinoids*, with *Chætetes* and *Fenestella* of undetermined species.

Above the quarry there is a slope of some forty or more feet to the summit of the hills, apparently occupied by clays; and the quarrymen informed us that there is immediately under the bed of limestone an eight feet bed of clay, beneath which they had made no excavations.

West of this locality, the surface of the country soon descends gradually into a depression connected on the north with the valley of a small stream flowing into the Missouri above Fort Leavenworth. In this immediate neighborhood the face of the country is slightly inclined to be hilly, but the soil is rich, and the long gentle slopes are clothed in the spring and summer months with a luxuriant growth of prairie grass. From several points near here, we had a fine view of the broad rich valley, with its beautiful groves and scattering farm houses along the little stream to the north of us.

Beyond this, the road after passing over some undulations, ascends to the summit of the country, which is rich elevated prairie land. At several places near the upper part of the slopes some five or six miles from Leavenworth, we met with outcrops of light grey limestone, apparently in ten to twelve inch layers, containing *Fusulina*, *Productus semireticulatus*, *Chætetes*, and small *Cyathophylloid* corals. These beds probably belong to the same horizon as the limestone near the top of the bluffs back of Leavenworth, or may even hold a higher position.

At Big Stranger creek, some fourteen or fifteen miles west of Leavenworth city, the following section was observed in descending order:

	Feet.
1. Slope, without any exposure of rocks,..	60
2. Layers of limestone, weathering yellowish, containing *Spirifer cameratus* and *Fusulina cylindrica*...	8

3. Slope probably occupied by shale or clay.. 40
4. Grayish yellow limestone, with *Fusulina cylindrica* and *Spirigera subtilita*.. 5
5. Bluish gray soft shale, or laminated clay with occasional harder sandy seams.. 38
6. Coal immediately overlaid by one inch of *cone-in-cone*........................ ½
7. Bluish gray laminated clay or soft shale, extending down to the creek 18

Again, on Little Stranger creek, some twelve miles south west of Leavenworth city, there is a somewhat similar exposure, containing a twenty inch bed of coal. This bed is worked to some extent on the land of Mr. Charles Stone, where the following section may be seen in the descending order :

Feet

1. Light gray, or bluish gray, soft calcareous sandstone with harder layers containing much argillaceous matter, with *Productus splendens? Myalina subquadrata*, an undetermined *Monotis*, and many fucoidal markings ; exposing a thickness of.. 15
2. Blue laminated clays more or less arenaceous above........................ 26
3. Coal.. 1¾
4. Bluish gray somewhat ferruginous clay rising above the creek.......... 4

We have no means of determining what relations the rocks composing these two sections bear to the exposure at Leavenworth, but we think they hold a position between the bed of limestone seen near the top of the hills back of Leavenworth city, and the upper bed of the section near the Leavenworth landing.

Between Big Stranger and Grasshopper creeks, the road passes over a beautiful rich prairie, elevated about 350 or 400 feet above the Missouri. In crossing this prairie we met with no exposures of rock, the whole being covered by heavy Quaternary deposits, into which wells have been sunk at several places, from thirty to seventy feet without striking solid rock *in situ*. At one or two places, however, we saw masses of limestone which had been quarried for building purposes along a little stream two or three miles north of the road. These contained amongst other fossils *Spirifer cameratus*, *Orthisina umbraculum? Fusulina cylindrica*, and fragments of *Fenestella*, with spines and plates of *Archæocidaris*. We had no opportunity to examine the quarry from which this rock was obtained, but were informed that the bed is some sixty or seventy feet below the summit of the higher portions of the surrounding country.

In descending from this elevated prairie into the valley of Grasshopper creek, at Osawkee village, we observed,

Feet.

1. A bed of hard gray limestone near the summit of the slopes, containing great numbers of *Fusulina*.. 8
2. Slope, no rocks exposed, about.. 55
3. Outcrop of *Fusulina* limestone, apparently.. 3
4. Slope, no rocks exposed.. 50
5. Gray or bluish gray limestone, weathering yellowish, containing *Pleurotomaria humerosa*, *P. subturbinata*, and a large undetermined species of *Bellerophon;* also *Allorisma? Leavenworthensis*, *Myalina subquadrata*, *Pinna* undt., *Spirifer cameratus*, *S. planoconvexa* and *Productus æquicostatus*, with great numbers of *Fusulina cylindrica*.. 3
6. Dark gray indurated clay.. 2
7. Rather soft argillaceous limestone.. 4

The fact that several of the fossils seen here in bed No. 4 are the same species found in No. 5, of the section at Leavenworth landing, would seem to indicate that these beds occupy the same geological horizon. It is very difficult, however, to identify the same beds at different localities amongst these formations, in consequence of the fact that the fossils found in them usually have a great vertical range, and exactly similar strata are often repeated in various parts of the series. Should it prove to be the case that they do occupy the same geological horizon, it would show that there is here a gentle eastward dip; for the lowest bed of this section on Grasshopper creek, cannot be less than 100 feet higher than the base of the section at Leavenworth city.

Still we incline to the opinion that the strata near here, if not almost horizontal, or merely undulating, have a general inclination towards the west, or somewhat north of west, and that the exposure on Grasshopper creek, is composed of much more modern beds than those near the landing at Leavenworth city. At any rate we saw an exposure at Lawrence landing, on the Kansas, composed of ledges of limestone, overlaid by clay, and having a decided dip to the west or north of west, at a rate of not less than fifty feet to the mile. This limestone consists of an upper hard gray layer, about three feet in thickness, resting on a soft gray arenaceous bed, of which some one or two feet were visible above the surface of the river when examined by us. In these beds we saw *Spirigera subtilita*, *Productus splendens?* and *Myalina subquadrata.* Above these, about eleven feet of gray laminated clay were exposed, the upper part of the bed having a more yellowish tinge, and containing more arenaceous matter than the lower.

If these beds continue to rise at the same rate towards the east, they must of course run out on the summit of the highest part of the country not far east of Lawrence; and the same inclination to the west or north west, would take them far beneath the horizon of the base of the section seen on Grasshopper creek.

Above this exposure at Lawrence landing, there is a space of about 160 feet in which no outcrops were seen excepting some red and blue clays near the upper part of the hills, back of the town. Just above these clays, some ledges of gray limestone were seen, apparently altogether about eight feet in thickness, containing *Fusulina cylindrica, Spirigera subtilita,* and *Spirifer cameratus.*

West of Grasshopper creek, on both sides of the Kansas, the country becomes lower near the river, but at a distance of some ten or twelve miles back, on the north side, it appears to be nearly as elevated as on the east of Grasshopper creek. Between this higher country and the Kansas, there is a plateau, apparently elevated not more than sixty feet above the broad level prairie bottoms along the river; while on the south of the Kansas, some five or six miles south west of Topeka, there are some isolated hills apparently of the same elevation as the high country north of the Kansas.

At several places soon after crossing Grasshopper creek, we met with some highly fossiliferous beds along the small streams, at an elevation of apparently about eighty feet above the Kansas. Below we give a section of these beds seen at a locality some eight miles south west of the point where the exposures mentioned on Grasshopper creek were observed:

	Feet.
1. Rough seams and layers of concretionary limestone of bluish tinge with partings of clay, containing *Terebratula millepunctata, Spirigera subtilita, Spirifer cameratus, S. Kentuckensis, Retzia Mormonii, Rhynchonella Uta, Productus Norwoodii, P. splendens? P. semireticulatus, P. Prattenianus, Orthisina,* similar to *O. umbraculum,* also *Fenestella* and *Chætetes* of undetermined species	4
2. Black shale, shading upwards gradually into laminated blue clay	2½
3. Hard blue or gray limestone, with *Spirifer cameratus, Spirigera subtilita, Myalina, Pecten, &c*	1
4. Bluish gray soft clay, with seams of hard limestone	3
5. Light gray, somewhat granular limestone with a few round grains, and very small pebbles of quartz	2

At another place on the south side of the Kansas, about twelve miles south west of the point where the last section was seen, there is an abrupt bluff near the old Baptist Mission, composed of the following beds in the descending order:

	Feet,
1. Slope, no rocks exposed	20
2. Hard yellowish gray limestone, with fragments of fossils	4
3. Slope, no rock exposed	18

4. Light gray, rather hard fine grained sandstone	3
5. Slope	20
6. Fine grained sandstone, in thin layers, not well exposed—apparently	2
7. Slope, with occasional outcrops hard gray limestone	16
8. Yellowish and dark gray laminated clay, or soft shale, with layers and nodular concretions of argillaceous carbonate of iron, near base*	90
9. Hard bluish argillaceous limestone, of which there was exposed in the bed of a small stream, not more than 13 or 15 feet above the river, a thickness of	1

After passing this locality, we heard of a coal mine some three or four miles south of here, near the base of an isolated hill, known as Shunganunga Mound. We did not visit this mine, but were informed that it is considerably above the summit of the last section, and that the bed is about 18 inches in thickness. The coal is said to be of good quality.

Above here on both sides of the Kansas, the country continues to be rather low, no part of it being apparently more than two hundred feet above the river. For a long distance above this, there is a beautiful broad, level bottom prairie, on the north side of the Kansas, extending back from four to six miles, and as much as eighteen or twenty miles along the river. Bounding this on the north, the country rises by a gentle grassy slope to an elevation of from sixty to about one hundred feet, furnishing the most beautiful sites for dwelling houses.

For a considerable distance above the locality where the exposure near the old Baptist Mission was examined, the hills especially near the river on the south side, appear to be mainly composed of rather heavy deposits of laminated clays and shales, with soft sandstones and occasional thin beds of limestone, containing the usual fossils of the upper carboniferous series. At the crossing of Mission creek, at an elevation of perhaps not more than twenty-five or thirty feet above the Kansas, exposures were observed consisting first above of five feet of light gray laminated clay, resting upon two or three feet of soft yellow sandstone, which passes down into laminated arenaceous clays, of which some eight or ten feet were exposed above the creek.

Some fifteen or sixteen miles west of the point where the road crosses Mission creek, at a locality six or seven miles south of the Kansas, there is a high elevation known by the name of Buffalo mound, rising as much as four hundred and fifty or sixty feet above the river. At one place a large creek called on the maps, Upper Mill creek, sweeps close along the northern base of this elevation, and has carried away the loose debris so as to leave the lower strata well exposed. The section here beginning at the summit of this hill is,

	Feet.
1. A slope of about 160 feet, along the lower forty feet of which we found loose specimens of *Spirifer cameratus*, *S. planoconvexa*, *Retzia Mormonii*, *Productus splendens? Chenctes Verneuiliana*, *C. mucronata*, and *Fusulina cylindrica*, var. *ventricosa*, with fragments of *Chœtetes*, *Crinoids*, *&c.*, of undetermined species	
2. Bluish gray limestone in two layers, the upper of which contains columns of *Crinoids*, *Productus Calhounianus*, *&c.*, while *Myalina subquadrata*, *Orthisina Missouriensis*, *Allorisma*, *Pinna*, *Monotis*, *&c.*, of undetermined species, occur in the lower	3
3. Slope with no exposures of rock	96
4. Rather hard mottled brown and light gray compact limestone, with a few *Crinoid* columns ; may be thicker, but only showing a thickness of	3
5. Brown, whitish and green clays, with rugged white calcareous concretions	4
6. Fine argillaceous sandstone, with streaks of yellow and brown colors	1½
7. Ash colored clay	10

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*There may be some thin beds of limestone in this portion of the section, as every part of this ninety foot bed was not well exposed,

8. Clays of red or brownish colors above; blue and green below	3½
9. Deep brown clay, with rugged concretions of same color	3
10. Hard light bluish limestone, with some rather large columns of *Crinoids*, *Chonetes*, *Verneuiliana*, *&c*	2½
11. Brown, ash colored, and blue laminated clays, which are more or less arenaceous, with near the middle some 5 or 6 inches black shale	46
12. Gray and purple argillaceous limestone, with *Pinna*, *Productus*, and a few *Fusulina*	1¼
13. Green laminated clay	4
14. Two or three layers of soft fine grained sandstone, more or less argillaceous, and separated by seams of clay	2
15. Bluish and ash colored clays	21
16. Alternate layers of hard bluish gray limestone, and seams of clay with sandy concretions	3
17. Rather hard yellowish limestone, with *Fusulina*	2½
18. Ash colored clay, not very well exposed	15
19. Yellowish impure limestone with *Fusulina*	2
20. Ash colored laminated clays—above the creek	5

About three hundred yards below where this section was taken, the creek was observed to fall nearly a foot, over a ledge of hard limestone; and one mile further down, the bed of the creek is composed of a hard yellow limestone containing great numbers of *Fusulina*. At these localities Mill creek is probably not elevated more than thirty feet above the Kansas.

Near half a mile east, or south east, of the point where the *Fusulina* limestone was seen in the bed of Mill creek, and at a somewhat higher elevation, we saw apparently the same bed of *Fusulina* limestone showing a thickness of three feet. Under this there was at one place exposed a thickness of some four or five feet of very fine yellow sandstone with minute specks of Mica. These exposures indicate a moderate dip of the strata towards the west or north west.

On the north side of Kansas, in a direction a little west of north, and about sixteen miles from the last mentioned localities, we observed an outcrop on a small stream marked "Last Creek" on the maps, presenting the following section, descending:—

	Feet.
1. Seams yellow magnesian limestone, alternating with clay, showing a thickness of about	8
2. Yellow soft granular magnesian limestone, containing *Productus Norwoodi*, and an undetermined species of *Myalina*	4
3. Fine laminated black shale	1
4. Gray rather soft argillaceous limestone	1
5. Blue somewhat indurated very fine calcareous clay containing at its junction with the next bed below, *Chonetes*, *Synocladia biserialis*, *Chætetes*, and fragments of *Crinoids*	9
6. Seams hard, compact gray limestone, alternating with softer argillo-calcareous matter, and containing casts of many small *Cypricardia*-like shells, small *Murchisonia*, *Pleurotomaria*, *Macrocheilus*, *Naticopsis*, *Bellerophon*, &c	2
7. Bluish laminated clays weathering to drab color	4
8. Yellow rather soft granular magnesian limestone, with embedded fragments of harder more compact do	5¼
9. Bluish indurated calcareous clays	3

The base of this section is evidently not elevated much above the Kansas, as it extends down to the bottom of a deep ravine formed by the creek, while its top appeared to be nearly on a level with the surface of the bottom prairie in the Kansas valley. These beds dip a little to the north west, and are very similar, especially the magnesian limestones, to some of the Permian strata holding a position far above this in the series, some considerable distance west of here. Only about three miles further west, we saw the following exposure on Vermilion creek :—

	Feet.
1. Slope of about fifteen feet, with near the base some ledges of gray limestone, amongst loose fragments of which we picked up specimens of *Spirigera subtilita*, *Spirifer hemiplicata*, *Productus Norwoodi*, and *P. splendens?*	15
2. Slope, no rock seen	26
3. Soft bluish and gray more or less laminated clays with irregular sandy seams and concretions	12
4. Irregular hard blue calcareous seam one to six inches	½
5. Blue clay	2
6. Soft decomposing more or less laminated sandstone	4
7. Blue clay one foot above the creek	1

Almost directly opposite these localities, on the south side of the Kansas, some three or four miles back from the river, and nearly on a line between the locality where we saw the exposures on "Last Creek" and Buffalo mound,—but considerably below the level of the summit of the latter, we examined some exposures presenting beneath a slope of about eighty feet, in descending order :

	Feet.
1. Hard bluish gray limestone of which there was exposed	1
2. Rough yellowish magnesian limestone with cavities lined with chalcedony	3
3. Bluish and ash colored clays	5
4. Layer much like No. 2	1
5. Yellowish green clay	20
6. Bluish gray limestone in two layers, the upper of which contains columns of *Crinoids*, *Productus Calhounianus*, &c., while *Myalina subquadrata*, *Orthisina Missouriensis*, *Allorisma*, *Pinna*, *Monotis*, &c., occur in the lower	3
7. Bluish and ash colored clays exposing a thickness of	5

The bed No. 6 of this section is evidently the same as No. 2 of the section at Buffalo mound (page 12), though here the dip of the strata has brought it lower. Its elevation above the Kansas at Buffalo mound must be about two hundred and fifty feet. We had no means of estimating very accurately its elevation where the last section was taken, though we do not think it as much as one hundred and seventy-five feet above the Kansas.

Ten miles farther west, on the same side of the river, along a small stream marked "Deep creek" on the maps, at a point some four or five miles back from the Kansas, and elevated perhaps as much as forty feet above it, some outcrops were examined near Zeandale, presenting the following section, descending :—

	Feet.
1. Long slope of about one hundred feet, no rocks seen	100
2. Dark argillaceous limestone, stained with iron, and containing fragments of *Crinoids*	4
3. Soft decomposing argillaceous limestone	2
4. Very hard light yellow compact limestone in one massive bed,—containing great numbers of *Fusulina*, also *Productus Calhounianus*, &c	6
5. Ash-colored laminated clay	22
6. Hard decomposing argillaceous limestone with *Fusulina*	3
7. Blue, green, and ash-colored clay	18
8. Gray argillaceous limestone, with more or less ferruginous matter	3
9. Light bluish clay somewhat laminated	7
10. White decomposing argillaceous limestone with *Productus Calhounianus*	1

We heard of a bed of coal some four or five miles above this on the same creek, but were unsuccessful in an attempt to find the locality where it crops out. We were informed, however, by Mr. Pillsbury, an intelligent gentleman living at Zeandale, that the bed is from four to six inches in thickness, and overlaid by about three and a half feet of blue shale, strongly impregnated with alum. Above the latter, he said there is an eight or ten inch layer of dark argillaceous material, weathering to an iron rust color, and containing many nodular concretions,—perhaps of carbonate of iron. From the information obtained in regard to the location and elevation of this coal bed, we are inclined to believe it must hold a position a little below the horizon of the middle of the slope at the top of the foregoing section. It is probably the highest bed of coal in the whole series of this region,—at any rate we saw no indications of coal above it.

About a mile or a mile and a half north of the locality where this coal bed has been seen, the dividing ridge between the Kansas and Deep creek, rises to an elevation of near three hundred and twenty feet above the latter stream at the nearest point. Here at the summit of this ridge there are some thin outcrops of gray and whitish argillaceous limestone, showing on weathered surfaces a somewhat laminated structure, and containing at places large spines of a species of *Archæocidaris;* beneath this there is about two feet of gray fragmentary limestone reposing on a more compact bed of hard gray limestone near three feet in thickness, and often cellular in the middle. Along the slope about one hundred and twenty feet below the horizon of these beds, we found loose specimens of *Spirifer cameratus*, *Orthisina umbraculum?* *Rhynchonella Uta*, *Allorisma*, *Synocladia biserialis*, &c. Just below these, there were many loose slabs of light yellowish fine grained calcareous sandstone, containing *Productus*, *Pecten*, and *Fucoidal* markings. About forty-seven feet lower down the slope, and near one hundred and fifteen feet above the level of the Kansas, there is an exposure of light grayish yellow granular limestone, showing a thickness of three feet, in which we only saw fragments of a *Chonetes*, and *Crinoid* columns: large tabular masses of this rock were strewed along the slope for some distance below.

At the mouth of Big Blue river, on the south side of the Kansas, there is an abrupt bluff, along which several slides have exposed many of the beds composing the high ridge mentioned six or seven miles below here. The dip, however, of the strata towards the west, or north west, is so great that the limestone containing spines of *Archæocidaris*, seen on the summit of the ridge below this, at an elevation of about 320 feet above the Kansas, is here, opposite the mouth of Big Blue river, only elevated about 214 feet above the Kansas; consequently the three feet of grayish yellow limestone cropping out 115 feet above the Kansas along the slope of the ridge above mentioned, at the mouth of Blue river, has sunk beneath the level of the Kansas.

This far we have scarcely attempted to draw parallels between the various beds seen by us at different places, in consequence of the fact that our observations were isolated, as must necessarily be the case in a mere reconnoissance, extended over a large area in a short space of time. In addition to this, the group of rocks examined presents no extensive beds of limestone or other hard material, forming well marked horizons, or continuous lines of outcrop, by which the relations between strata seen at different localities could be traced out. This difficulty is also greatly increased by the frequent repetition of precisely similar beds at different horizons in the series, and above all by the great vertical range of the organic remains. Consequently we have preferred to present separately the local sections examined, instead of attempting to construct a continuous general vertical section showing the order of superposition of the various strata. To do this successfully throughout all the various rocks of the whole Kansas valley, would require much more time than we had at our command.

As our examinations along the Kansas and Smoky Hill rivers above this point were made in more detail, where the outcrops were more frequent and continuous, we have, as we believe, been able to trace out the connections and order of succession of the various strata with considerable accuracy. Hence, we give below a general section of the rocks in this region, commencing with the Cretaceous sandstones on the summits of the Smoky Hills, lat. 38° 30′ N., long. 98° W., and descending through the various intermediate formations seen along the Smoky Hill and Kansas rivers, to the base of the bluff already mentioned, opposite the mouth of Big Blue river, on the Kansas. It is true, there are a few gaps in this section, where we were unable to see the beds along some of the slopes, but as we know the position in the series, as well as the extent of these gaps, it will be easy to determine, when a greater number of exposures have been examined, the nature of the beds occupying them.

General section of the Rocks of Kansas Valley from the Cretaceous down, so as to include portions of the upper Coal measures.

Feet.

1. Red, brown, and yellowish, rather coarse grained sandstone, often obliquely laminated, and containing many ferruginous concretions; also, fossil wood and many leaves of dicotyledonous trees, some of which belong to existing genera, and others to genera peculiar to the Cretaceous epoch. *Locality, summit of Smoky Hills*.................. 60

2. Whitish, very fine grained argillaceous sandstone, underlaid by bluish purple and ash colored clays. *Locality same as preceding*.................. 15

3. Long, gentle slope, with occasional outcrops of ash colored red, blue, and whitish, more or less laminated clays, with thin beds of sandstone. *Locality same as preceding, and extending down at places nearly or quite to the bluffs of Smoky Hill river;* thickness about.................. 200

4. Red sandstone, with some layers of hard, light gray calcareous, do., and both containing ferruginous concretions. *Locality, bluffs Smoky Hill river, five or six miles above Grand Saline river.* Probably local, thickness seen about.................. 15

5. Bluish, red, light yellow, and gray clays, and soft claystones, with sometimes a few thin layers of magnesian limestone. In many places these clays have been traversed in every direction by cracks, into which calcareous and argillaceous matter have found their way, and subsequently become consolidated so as to form thin seams of impure yellowish limestone, which cross and intersect each other at every angle. The red clays are usually less distinctly laminated, contain more arenaceous matter, and often show ripple marks on the surfaces. *Locality, Bluffs along Smoky Hill river, above the mouth of the Grand Saline*.................. 60

6. Light gray, ash colored, and red clays, sometimes arenaceous, and often traversed by cracks, filled with calcareous matter as in the bed above,—alternating with thin layers and seams of gypsum. *Locality, near mouth Smoky Hill river*.................. 40

7. Rather compact amorphous white gypsum, with near the base disseminated crystals, dark colored do. *Locality same as last*..................4½ to 5

8. Alternations of ash colored, more or less arenaceous clays, with thin beds and seams of gypsum above; towards lower part, thin layers of claystone, and at some places soft magnesian limestone. *Locality same as last*.. 50

9. Rough conglomerated mass, composed of fragments magnesian limestone and sandstone, with sometimes a few quartz pebbles, cemented by calcareous and arenaceous matter; variable in the thickness and probably local. *Locality, south side Smoky Hill river, ten or twelve miles below Solomon's Fork*..................seen 18

10. Bluish, light gray, and red laminated clays, with seams and beds of yellowish magnesian limestone, containing *Monotis Hawni*, *Myalina perattenuata*, *Pleurophorous? subcuneata*, *Edmondia? Calhouni*, *Pecten* undt. and *Spirigera* near *S. subtilita;* also *Nautilus eccentricus*, *Bakevellia parva*, *Leda subscitula*, *Axinus rotundatus*, and undetermined species of *Bellerophon*, *Murchisonia*, *&c.* *Locality, near Smoky Hill river, on high country south of Fort Riley, as well as on Cottonwood creek*.................. 90

11. Light grayish and yellow magnesian limestone, in layers and beds sometimes alternating with bluish and other colored clays, and containing

Solemya, a *Myalina* near *M. squamosa*, *Pleurophorous? subcuneata*, *Bakevellia parva*, *Pecten* undt., and a *Euomphalus* near *E. rugosus;* also, a *Spirigera* allied to *S. subtilita*, but more gibbous, *Orthisina umbraculum? O. Shumardiana*, &c. *Locality, summit of the hills, near Fort Riley and above there; also seen on Cottonwood creek*.. 25 to 35

12. Light grayish yellow, rather granular magnesian limestone, containing spines and plates of *Archæocidaris ;* a few fragments of small *Crinoid* columns, *Spirifer* similar to *S. lineatus*, but perhaps distinct; also same *Spirigera* seen in beds above, *Orthisina Shumardiana*, *O. umbraculum?* and *Productus Calhounianus*. *Forms distinct horizon near summit of hills in vicinity of Fort Riley, also seen on Cottonwood creek*.. 7 to 8

13. Soft argillo-calcareous bed, apparently local. *Kansas Falls*........... 5

14. Light grayish and yellowish magnesian limestone, containing many concretions of flint, also the same *Spirigera* found in beds above, and *Productus Norwoodi P. Calhounianus*, with *Discina tenuilineata* and an undetermined *Monotis*. *Fort Riley and below, also at Kansas Falls and on Cottonwood creek*.. 38

15. Alternations, bluish, yellowish and brown clays, with a few thin seams of limestone. *Fort Riley, Kansas Falls; also below Fort Riley, and on Cottonwood creek*.. 35

16. Light yellowish magnesian limestone, containing *fucoidal* markings, fragments of small *Crinoid* columns, *Pecten*, *Allorisma*, *Spirigera*, *Orthisina umbraculum? O. Shumardiana*, *Discina tenuilineata*, *&c. Lower quarry at Fort Riley, and at other places above and below Fort R., as well as on Cottonwood creek*.. 4 to

17. Alternations of blue, red, and light gray clays, with sometimes thin layers and seams of magnesian limestone. *Fort Riley*........................ 28

18. Light gray and whitish magnesian limestone, containing *Spirigera*, *Orthisina umbraculum? O. Shumardiana*, *Productus Calhounianus*, *Acanthocladia Americana*, and undt. *sp. Cyathocrinus*. Lower part containing many concretions of flint. *Fort Riley and on Cottonwood creek*. Whole thickness about.. 40

19. Brown, green, and very light gray clays, alternating; contains near the upper part fragments of *Crinoid* columns, *Synocladia biserialis*, *spirigera*, *Productus Norwoodi*, *Chonetes mucronata*, *Orthisina Shumardiana*, *Orthisina umbraculum*, *&c.*, with teeth of *Petalodus Alleghaniensis*. *Fort Riley*............ 14

20. Alternations of rather thin layers light yellowish magnesian limestone, and various colored clays; the limestone layers containing *Monotis*, *Synocladia biserialis*, *&c. Locality same as last*.. 33

21. Slope, no rocks seen. *Below Fort Riley*.. 25

22. Whitish, or very light gray magnesian limestone, rendered porous by cavities left by the weathering out of numerous *Fusulina*. This is the highest horizon at which any remains of *Fusulina* were met with. *Some four miles below Fort Riley, along a creek on the south side of the Kansas, and apparently not more than ten feet above it*.. 2

23. Bluish, light gray, and brown clays, with occasional layers of magnesian limestone. *Chonetes mucronata*, *Orthisina umbraculum? Monotis*, *Fusulina*, *&c. Ten miles below Fort Riley*.. 35

24. Hard, very light yellowish gray magnesian limestone, with *Fusulina*, and spines of *Archæocidaris*. Forms a marked horizon near the *same locality as last*.. 6

25. Slope, with occasional exposures, thin layers of *Fusulina*, limestone, and seams of gray limestone containing *Myalina*, *Monotis*, *Pecten* and fragments of *Synocladia biserialis*. *Near same locality as last*.......................... 36

26. Light gray argillaceous limestone, showing on weathered surfaces a somewhat laminated structure; contains large spines of *Archæocidaris*. *Near Ogden Ferry, and Manhattan*.. 9

27. Gray limestone, often fragmentary, with much clay above; lower part hard, and more or less cellular in middle. *Locality, same as last*....... 5

28. Whitish clays and claystones, with a thin layer of hard compact gray limestone near the middle. *Locality same as last*.... 10

29. Light greenish indurated clays. *Same locality*.......................... 3

30. Hard, heavy bedded, white argillaceous limestone, containing *Monotis* and *Avicula*. *Ogden Ferry, and below there*.. 5

31. Very thinly laminated dark green shale. *Three miles nearly east of Ogden Ferry, on McDowell's creek; also at Manhattan, on the Kansas*........... 1

32. Light greenish and flesh-colored hard argillaceous limestone, with *Spirifer cameratus*. This is the highest horizon at which we found this species. *Same localities*... 3

33. Alternations of bluish, green, and red more or less calcareous laminated clays, light gray limestones and claystones, with *Pecten*, *Monotis* and fragments of *Crinoid* columns. *Same localities* 30

34. Alternations bluish, purple, and ash colored calcareous clays, passing at places into claystones, and containing in a thin bed near the middle, *Spirifer planoconvexa*, *Spirigera subtilita*, *Productus splendens?* *Rhynchonella Uta*, &c. *Locality same as preceding*....... 12

35. Blue, light gray, and greenish clays, with occasional harder seams and layers of claystone and limestone. *Same locality*......... 33

36. Somewhat laminated claystone of light gray color, with more or less calc spar near lower part. *Manhattan*... 19

37. Alternations of dark gray and blue, soft decomposing argillaceous limestone, with dark laminated clays, or soft shale, containing great quantities of *Fusulina cylindrica*, *F. cylindrica*, var. *ventricosa*, *Discina.Manhattanensis*, *Chætetes*, and fragments *Crinoids;* also, *Chonetes*, *Verneuiliana*, *C. mucronata*, *Productus splendens?* *Retzia Mormonii*, *Rhynchonella Uta*, *Spirigera subtilita*, *Spirifer cameratus*, *S. planoconvexa*, *Euomphalus*, near *E. rugosus* and *Synocladia biserialis*; also *Cladodus occidentalis*. *Locality, same as last*......... 18

38. Soft bluish shale, with yellow laminated arenaceous seams below, containing Fucoidal markings. *Same locality*.............................. 25

39. Two layers gray argillo-calcareous rock, separated by two feet of dark green and ash colored clays. The calcareous beds contain fragments of Crinoids, Chonetes, and *Myalina* of undt. species. *Same locality as last*... 4½

40. Light greenish, yellow, and gray clays and claystones, extending down nearly to high water mark of the Kansas, *opposite the mouth of Blue River*.. 27

The foregoing general section of the strata seen along the valley of Kansas and Smoky Hill rivers, from the mouth of Blue river to the 98th degree of west longitude, is presented in its present form more with a view of illustrating the vertical range of the organic remains found in these rocks, than as an attempt to group the beds into formations that may be expected to preserve their distinctive lithological characters throughout areas of any great extent. As this has necessarily been done from a knowledge of only a portion of the fossils characterizing these strata, it is quite probable, when more extensive collections are obtained, that it may be found necessary even on this principle, to classify and group the beds somewhat differently. We are also aware that some of these beds probably increase or diminish greatly in thickness, or may even entirely thin out, at no very great distances from the localities where we saw them.

Among the more peculiar features of the series of rocks represented by this general section, and in part by the preceding local sections, may be mentioned first, the great number of thin layers and beds; and secondly, the frequent repetition of similar beds at various horizons. Again, the almost entire absence of heavy massive strata of limestone, or other hard material possessing sufficient durability to form perpendicular escarpments of much extent, is worthy of note. As a general thing, the limestones vary from only a few inches in thickness, to from one to three or four feet, and rarely, as in Nos. 14 and 18, attain a thickness of from thirty-eight to forty feet. Although various light colored laminated clays, and soft argillaceous shaly beds predominate, and arenaceous material is not unfrequently present, it is somewhat remarkable, that dark bituminous shales and beds of coal are rarely met with, even among the outcrops seen along the Kansas, below the mouth of Blue river, belonging to the upper coal measures, and holding a position below the base of the foregoing general section; while through a considerable thickness of beds belonging to higher portions of the coal measures included in the lower part of this section, as well as through the strata containing Permian fossils above, beds of coal and dark carbonaceous shales appear to be almost, if not entirely wanting.

It will be observed we have in this general section, without attempting to draw lines between the systems or great primary divisions, presented in regular succession the various beds with the fossils found in each, from the Cretaceous sandstone on the summits of the Smoky Hills, down through several hundred feet of intermediate doubtful strata, so as to include the beds containing Permian types of fossils, and a considerable thickness of rocks in which we find great numbers of upper coal measure forms. We have preferred to give the section in this form because, in the first place, the upper Coal measures of this region pass by such imperceptible gradations into the Permian above, that it is very difficult to determine, with our present information, at what particular horizon we should draw the line between them, while on the other hand, it is equally difficult to define the limits between the Permian and beds above, in which we found no fossils.

Beginning near the base of this section, we find we have in great numbers the following well known and widely distributed Coal measure fossils, viz.: *Fusulina cylindrica*,* *Chonetes Verneuiliana*, *Productus splendens*, (or a closely allied species,) *Retzia Mormonii*, *Rhynchonella Uta*, *Spirigera subtilita*, *Spirifer cameratus*, *S. planoconvexa*, and a *Euomphalus* similar to *E. rugosus* of the Coal measures, while the few new and undetermined species associated with these, are, for the most part, also decidedly more nearly allied to Carboniferous than Permian forms. We should here remark, however, that we occasionally met with a species of *Monotis*, allied to the Permian species *M. Speluncaria* and *Synocladia biserialis*, also regarded in the old world as a Permian genus, at horizons far beneath the base of this section, between Manhattan and the Missouri. We even found a single specimen of this *Monotis* as low down as bed No. 9, of the section taken near the landing at Leavenworth City, which must occupy a position several hundred feet below the lowest beds of the above section. Still as this shell is very rare in these lower rocks, and the *Synocladia* is a distinct species from the well known Permian form of the old world, while they are both, at these horizons, associated with great numbers of the common well known Coal measure species we can only regard their presence in these beds as establishing the existence of these genera at an earlier period in this country, than in the old world. This, it seems to us, is more philosophical than it would be to place all this great thickness of strata, with their vast numbers of well known Coal measure species, in the Permian, merely because we also find with these occasionally a few forms which would in the old world be regarded as characteristic of the Permian epoch.

Taking it for granted then, that we have carried this section down far enough to include, not only all the beds containing almost exclusively Permian forms, but a considerable portion of the upper Coal measures, it will be interesting to notice, as we ascend in the series, how far each of the Coal measure species mentioned in the lower part of the section, as well as of a few others that occur above and below, range upwards. Thus we see that *Fusulina cylindrica* var. *Ventricosa*, *Chonetes Verneuiliana* and *Retzia Mormonii* were not met with above division No. 37; while *Spirifer planoconvexa*, *Productus splendens?* and *Rhynchonella Uta*, were not observed above 34, nor *Spirifer cameratus* above 32. *Fusulina*

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* In Russia, *Fusulina cylindrica* is said to occur only in the upper part of the lower Carboniferous series; but the fossil generally referred to that species in this country, appears to be confined to the Coal measures. We have some doubts in regard to its identity with the Russian species.

cylindrica, of the slender variety so common in the Coal measures of Kansas and Missouri, was not seen above 22; nor was any species or variety of that genus observed above this horizon.

Apparently, the same species of *Monotis*, mentioned at various horizons far beneath, were occasionally met with in 30, 25, 23, and 20, generally associated with the same species of *Synocladia*, ranging far down into the upper Coal measures. In division No. 19, we again met with the *Synocladia biserialis*, and a *Spirigera* allied to *S. subtilita*, if not identical, along with a new species of *Chonetes* we have called *C. murcronata*, which ranges down into the beds near the base of the section. Along with these, were also *Productus Norwoodi*, and *Orthisina Shumardiana*, both of which are common in the Coal measures far below, and a large *Orthisina* similar .to *O. umbraculum*, but apparently more finely striate.

Ascending through the intermediate beds to No. 12, we continue to meet with nearly all the species mentioned in 19, with the exception of *Chonetes mucronata*. We also have, first in 18, a large species of *Productus*, called *P. Calhounianus* by Professor Swallow; very similar to some varieties of *P. semireticulatus*, but thought by Prof. S.,to present well marked internal differences. There is likewise added in 16, a large *Allorisma* and a *Spiriger* similar to *S. subtilita*, but much more gibbous; and in 14, *Discina tenuilineatus*, together with apparently the same *Monotis*, so often mentioned below. In 12, we also have added a small *Spirifer*, similar to *S. lineatus*, but perhaps more nearly allied to the Permian species *Martinia Clannyana*, King.

The succeeding bed above, No. 11, appears also to contain a mingling of Permian with Coal measure forms, for we have in it the following Permian types, viz.: *Myalina* very similar to *M. Squamosa*, *Pleurophorus ? subcuneata*, *Bakevellia parva* and *Monotis Hawni* along with a *Euomphalus* near *E. rugosus*, the same gibbous *Spirigera*, similar to *S. subtilita*, *Orthisina umbraculum?* and *O. Shumardiana*.

On passing into the next division above, No. 10, we find we have lost sight of all the characteristic Carboniferous forms, unless the *Spirigera* mentioned in some of the beds below be regarded as only a variety of *S. subtilita*, from which however, we think it specifically distinct; for with this exception, nearly all the fossils seen by us in this division, are such as would be regarded as Permian types. Although the number of *species* found by us in No. 10 is not great, *individual* specimens are often numerous. Above this horizon we saw no more fossils through a great thickness of various colored clays, claystones, &c., until ascending to the Cretaceous sandstones crowning the Smoky Hills.

If we do not admit the existence in this region of an intermediate group of rocks, connecting by slight gradations the Permian above, with the Coal measures below, and must draw a line somewhere, below which all is to be regarded as Carboniferous, and all above as Permian, we should certainly, upon palæontological principles alone, carry this line up as far as the top of division No. 11. The passage from the Carboniferous to the strata containing Permian types, however, is so gradual here, that it seems to us no one, undertaking to classify these rocks without any knowledge of the classification adopted in the old world, would have separated them into distinct *systems*, either upon lithological or palæontological grounds, especially as they are not, so far as our knowledge extends, separated by any discordance of stratification, or other physical break.* Indeed the fact that some of the Permian types occurring in No. 10, were first introduced in beds below this, containing many Carboniferous species, would seem to indicate that even No. 10, may possibly have been deposited just before the close of a period of transition from the conditions of the Carboniferous, to those of the Permian epoch.

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* We have been informed by Dr. J. G. Norwood, former State Geologist of Illinois, that the rocks in that State, referred by him and others to the same epoch as the Kansas Permian beds, rest unconformably upon the Coal measures. This, however, would be impossible in Kansas, since no disturbances of the strata occurred there, until after the close of the Cretaceous era, which would, of course, not only cause the Cretaceous and Carboniferous, but all intermediate beds, to dip at the same angle.

The apparent absence of fossils in the beds above No. 10, renders it impossible, with our present information, to determine with certainty the upper limits of the series containing Permian forms. It is true, there is at places a kind of conglomerated mass, occupying the horizon No. 9, which might appear to form a natural line of division between the beds containing the Permian fossils, and those above, in which we found no organic remains; but this seems to be local, and although there is a new feature presented by the zone of gypsum deposits above it, we find between the beds and layers of gypsum, and far above the horizon at which they occur, bluish, greenish, and other colored clays, not only similar to those between the beds and layers of limestone containing the Permian fossils in division No. 10, but also precisely like the laminated clays between the beds of limestone of the upper Carboniferous series far below. Again, in these clays of the gypsum zone, as well as through a considerable thickness of clays above it, there are occasional seams of claystone, which sometimes pass into seams of magnesian limestone, exactly like some of those containing Permian fossils, in division No. 10. We saw no fossils in these seams amongst the gypsum bearing beds, nor higher in the series, but it is probable they may yet be found in some of the more calcareous portions.

Another fact apparently indicating some kind of relation between the gypsum-bearing beds, as well as some of the higher deposits, and the rocks below, is, that we often find both in the clays between the beds of gypsum, and those between the limestone containing the Permian fossils, the same peculiar appearance caused by the cracking of the clays and subsequent infiltration of calcareous matter, seen in division No. 5. At some places the thin plates of limestone formed by the impure calcareous matter filling these cracks, may be seen ramifying through some rather thin beds of these clays in all directions, so as to cross and intersect each other at every angle. Where beds of this kind have been exposed for any length of time along near the tops of bluffs, the softer clays filling the interstices, often weather out, so as to have a curious cellular mass, with the numerous angular cavities.

From these facts we are inclined to suspect,—though we are fully aware that it is a question which can only be determined upon evidence derived from organic remains,—that not only the gypsum-bearing deposits, but a large portion, if not all, of division No. 5, belongs to the same epoch as the beds containing the Permian fossils below.

Between No. 5, and the Cretaceous above, there is still a rather extensive series of beds in which we found no organic remains; these may be Jurassic or Triassic, or both, though as we have elsewhere suggested, we rather incline to the opinion that they may prove to belong to the former. As we have fully discussed the question in regard to the Cretaceous age of the highest division of the foregoing section in a paper read before the Academy in December last, and in an article in the American Journal of Science, January, 1859, it is unnecessary for us to add any thing further on that subject here.

As already stated, our observations along the Kansas valley, to within twelve or fourteen miles of the mouth of the Big Blue river, were too isolated to determine in all cases the relations between outcrops seen at different places. Consequently, although we saw at several points along this part of the valley, indications of a westward or north-westward inclination of the strata, we were left in some doubt whether or not there is a general inclination of the rocks in that direction, between Wabounse and the Missouri. Above this point, however, our observations being more connected, and the exposures more continuous, we were able to determine very satisfactorily that there is at least from near Wabounse, a uniform dip towards the west or north-west, so that in ascending the Kansas valley from this region, we are constantly meeting with more and more modern rocks, as those we leave behind pass beneath the level of Kansas.

To illustrate this more clearly, we would, in the first place, remark that a bed of light greyish yellow granular magnesian limestone, mentioned on page 12, as occupying a horizon about 115 feet above the Kansas, two or three miles west of Zeandale, passes beneath the level of Kansas before reaching the mouth of the Big Blue river, a distance of near seven miles; while another bed (No. 26 of the foregoing section) seen on the very summit of the hills two or three miles north of Zeandale, at an elevation of about 320 feet above the Kansas, was observed opposite Manhattan at the mouth of Big Blue river, only some 214 feet above the Kansas. Again, bed No. 12 of the foregoing general section, which was seen at a locality nearly opposite Ogden, at an elevation of about 363 feet above the Kansas, is at Fort Riley, eight or nine miles further west, elevated only some 215 feet above Kansas. Above Fort Riley this bed forms a marked horizon, and can be followed by the eye without interruption for several miles along the hills on both sides of the river. We observed it gradually sinking as we ascended the Kansas valley, until at a point on Chapman's Creek, some fifteen miles a little south of west from Fort Riley, we saw it nearly down on a level with the Kansas; beyond this it was not again met with on the north side of the Kansas, but we saw it at somewhat higher elevations on the south side of the river a little west of this.

As the distance by an air-line, from the locality nearly opposite Ogden, where this rock occupies a horizon at an elevation of 363 feet above the Kansas to the mouth of Chapman's Creek, is about 23 miles, the dip would appear to be not far from 15½ feet to the mile. It must be borne in mind, however, that the average fall of the Kansas,—at least below Fort Riley,—according to the Barometrical observations of Col. Fremont and others, is near one and a half feet to the mile, and that if we assume the distance by the windings of the river between Chapman's Creek and Ogden, to be about thirty miles, it would make the elevation of the Kansas at the former locality some forty-five feet greater than at Ogden, which would reduce the dip to a fraction less than 14 feet to the mile. Still as the direction of the dip in this region is to the *north* of west, and the direction of the mouth of Chapman's Creek from Ogden is considerably *south* of west, it is probable the inclination of the strata here is greater than the above figures would indicate, and that it may not be less than twenty feet to the mile, in a north-west direction.

From the foregoing statements it will be seen that in consequence of the dip of the strata to the north-west, and in some slight degree to the fall of the Kansas and Smoky Hill rivers, the whole of the foregoing general section below No. 12 passes beneath the level of the Smoky Hill, between the mouth of Blue river and Chapman's Creek. Consequently, the limestones of the succeeding beds above being thinner and less durable than those below, and separated by heavy beds of clay; we find, as might be expected, that the country here in the region of the mouth of Chapman's Creek, is much lower than at Fort Riley and below.

On reaching the mouth of Solomon's Fork, we found the face of the country characterized by long gentle grassy slopes, no part of it near the river being apparently elevated more than about 60 or 70 feet above its surface. A short distance beyond this, we caught the first glimpse of the Smoky Hills, which were seen in a direction a little south of west from us, rising above the surrounding low country like dark blue clouds above the horizon. On approaching these, we found them always situated several miles back from the river, and rising some three hundred and fifty feet above it. The immediate bluffs of the river here, are generally composed of divisions No. 4 and 5 of the foregoing general section, and that portion of these hills above the level of the summits of the bluffs along the river, is made up of division Nos. 3, 2, 1, of the same section. On the south side of the river these hill have but a comparatively thin capping of the sandstone No. 1, but on the north side we saw it showing a thickening on some of them of sixty feet.

From some of these hills on the north side of Smoky Hill river, between it and the Grand Saline, we had an extensive and beautiful view of the surrounding country. In the north and north-west, many similar hills were in sight, and as the dip of the strata here is in that direction, it is probable some of this are not only chiefly made up of the sandstone No. 1, but surmounted by the other Cretaceous beds Nos. 2 and 3 of the Nebraska Cretaceous series; indeed, Dr. Engleman found all these formations occupying this relation on Republican river, not more than seventy miles north of this.*

Although this paper is merely designed to give a brief sketch of the leading geological feature of those portions of north-eastern Kansas visited by us, we cannot close it without alluding to the truly great agricultural and other natural resources of this new and interesting Territory. We mean no disparagement to other portions of the Mississippi valley, when we state, that after having travelled extensively in the Great West, and after having seen many of its most favored spots, we have met with no country combining more attractive features than Kansas Territory. Her geographical position gives her a comparatively mild and genial climate, intermediate between the extremes of heat and cold, while the rich virgin soil of her beautiful prairies is admirably adapted to the growth of all the great staple grain and root crops of the west.

It is true that in some districts there is rather a deficiency of timber, but as a general thing there is along the streams sufficient for the immediate wants of the country. In addition to this, the wonderful rapidity with which forests are known to have sprung up on similar prairie lands in Missouri, as the country became settled so as to keep out the annual fires, shows that the present scarcity of timber should not be regarded as presenting any serious obstacle to the settlement of the most extensive prairie district in Kansas.

Before going out into the interior of the Territory, we had expected to find the whole country immediately west of Fort Riley comparatively sterile; on the contrary, however, we were agreeably disappointed at meeting with scarcely any indications of decreasing fertility as far as our travels extended, which was about sixty miles west of Fort Riley. Here we found the prairies clothed with a luxuriant growth of grass, and literally alive with vast herds of Buffalo that were seen quietly grazing as far as the eye could reach in every direction. Even on the high divide between the Smoky Hill and Arkansas rivers, south of this, we found the soil rich and supporting a dense growth of grass; and from all we could learn from persons who have gone further out, the same kind of country extends for a long distance beyond this, towards the west. Hence we infer that the belt of unproductive lands between the rich country on the east, and the eastern base of the Rocky Mountains on the west, is much narrower than is generally supposed; and even this so-called desert country is known to possess a good soil, which may be rendered fruitful by artificial irrigation.

In regard to the mineral resources of Kansas, we have at present only time and space to say a few words. As already stated, coal is known to exist, though its extent is not yet fully determined, at several localities in the region of Leavenworth City, while the geological structure of the country, as well as discoveries already made, warrant the conclusion that this important and useful mineral abounds at many localities south of there. Limestone suitable for building purposes, and the production of quicklime, exist throughout large areas, while inexhaustible beds of gypsum are known to occur at several places not far west of the mouth of Solomon's river. Near this place we likewise saw in the lower Cretaceous rocks crowning the summits of the Smoky Hills, deposits of iron ore, but were unable to determine in the limited time at our command, whether or not it exists in large quantities.

Of the discoveries of gold in the mountains on the western borders of Kansas, much has been said; nothing, however, but a thorough geological survey, by authority of the Territorial or State government, (for Kansas must soon be a State,) can lay before the public such full, accurate, and reliable information on these subjects as will bring from the older States the capital, skill and enterprise necessary to develop the great natural resources of the country.

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*See Report of Secretary of War, Dec. 5th, 1857, page 497.

Note.—It affords us much pleasure to acknowledge here our obligations to Prof. Henry, of the Smithsonian Institution, for free access to the extensive series of books on Geology, Palæontology, &c., in the Smithsonian Library, while investigating these and our former collections from the west: also for the use of rooms in the Institution, and for many other favors of great value to us.

We are likewise under especial obligations to Capt. Stewart Vanvliet, and Mr. Levi Wilson of Fort Leavenworth, for favors while out in Kansas, without which we could have accomplished nothing: we also received many civilities from Major Sedgwick, Dr. T. G. Madison, Capt. W. S. Walker, and other officers of the army at Fort Riley.

List of the species mentioned in this paper with some remarks on the synonymy, and references to the works, in which they are described.

FORAMINIFERA.

Fusulina cylindrica, Fischer, Oryct. Moscow, p. 126, p. 18, fig. 1—5.

In Russia this species is said to occur only in the upper part of lower carboniferous or mountain limestone. Yet the species usually referred to *F. cylindrica* in this country, so far as our knowledge extends, is not found below the coal measures. From this fact, and some slight differences we observe between our specimens and the figures of the Russian species, we suspect a careful comparison of good specimens may possibly prove them to be distinct. Ranges in Kansas from division No. 22, of the foregoing section, far down into the coal measures. Found at numerous localities between Manhattan and the Missouri, usually in great numbers.

Fusulina cylindrica, var. *ventricosa*, Meek and Hayden, Proc. Acad. Nat. Sci. Phila. Dec. 1858, page 261. Division No. 37, of foregoing general section at Manhattan on the Kansas, and at Juniata on big Blue river.

BRYOZOA.

Synocladia biserialis. Prof. Swallow refers this species with doubt to *S. virgulacea*, Philips, sp. in Transactions Acad. Sci. St. Louis, vol. 1, p. 179, and points out some of the characters in which it differs, stating at the same time, in case it should prove to be distinct, that *biserialis* would be a good specific name for it. We regard it as quite distinct from Phillips' species, not only in scarcely ever having more than two rows of cellules, but also because the ?gemuliferous vesicles, instead of being merely "tubercular and open at the summit," have the form of short, but distinct spines apparently closed and rather obtusely pointed at the apex. The branches or connecting process are likewise less distinctly angulated between the longitudinal stems, than in *S. virgulacea.* Occurs at Fort Riley in No. 19 of foregoing general section, and at various lower horizons on the Kansas below there, down into the upper coal measures.

Acanthocladia Americana. In the Trans. Acad. Sci. St. Louis, vol. 1, p. 180, Prof. Swallow refers this species with a query to *A. anceps*, Schlot. sp. and remarks that it differs from that species in having "the rows of cellules diagonal to the axis of the stems, instead of longitudinal, as represented by King, and on ridges like that figured by Goldfuss." He also further remarks that "it is less regularly branched, and not so distinctly pinnated as those delineated by Goldfuss and King." In the specimens in our collection, the cellules are more numerous, and much more crowded, than in *A. anceps* as figured by King The specific name *Americana*, was suggested by Prof. Swallow.

We found this species in Division No. 18, of the foregoing general section, on Cottonwood Creek.

ECHINODERMATA.

Cyathocrinus —— ? A few scapular plates bearing some similarity to those of *C. ramosus*, Schlot. sp. were met with by us in division No. 18, but they are proportionably much thicker, and the articulating surfaces quite different.

Cottonwood Creek.

Archæocidaris —— ? In No. 12, we found spines and detached plates of apparently an undescribed species of this genus, but they were too much weathered to show clearly the specific characters. The spines are rather slender, terete, nearly straight, and provided with short scattering spinous processes, directed rather obliquely outwards and forward.

Cottonwood Creek

Archæocidaris —— ? The spines of this species are much larger than the last, and apparently destitute of spinous processes. They are as much as from three to four inches in length, nearly or quite straight, and not flattened or compressed.

Division No. 26, Manhattan and in same position on Cottonwood Creek.

BRACHIOPODA.

Discina tenuilineata n. sp.—We have only seen the lower valve of this species, which is extremely thin, nearly orbicular, and provided with a narrow perforation extending from very near the centre about half way out to the margin. The inner surface is ornamented by distant, extremely slender, distinctly elevated lines of growth, arranged concentrically around a point very nearly in the middle of the valve. The apex of the upper valve was probably nearly central. Diameter 0·50 inch.

Locality and position.—Cottonwood Creek, division No. 16.

Discina Manhattanensis n. sp.—Shell rather small, nearly circular; upper alve moderately elevated, apex rather obtusely pointed, located a little less than half the diameter of the shell from the posterior edge. Surface black and shining, marked by fine closely set concentric lines. Lower valve unknown. Greater diameter from 0·32 in. to 0·46.

Found in great numbers in division No. 37, opposite Manhattan, on Kansas river.

Productus splendens (?), Norwood and Pratten, Jour. Acad. Nat. Sci. Phila. N. S. vol. 3, pl. fig. 5. We refer this shell to the above species with some doubt; it is always smaller than the figure given by Norwood and Pratten, and rather more convex over the visceral region of the larger valve, while the smaller valve appears to want the band-like flattening around the border mentioned in the description of *P. splendens.* The ears extend beyond the body of the shell, are distinctly vaulted, and rarely have more than one spine on each, often none. The spines, however, are more numerous over the surface of the larger valve, being in this respect more like *P. muricatus* N. and P., but both valves want the concentric wrinkles represented in the figures of that species.

This neat little *Productus* is found in great numbers between Fort Riley and Manhattan, as well as at the latter place, in Division No. 34; also at various horizons below that in the upper coal measures of Kansas.

Productus Norwoodi, Swallow, Trans. Acad. Sci. St, Louis, vol. 1, p. 182. A few specimens of this species in our possession have the extreme point of the beak of the larger valve flattened or truncate, as though it had in the young state been attached to some marine body by that part of the shell. We have also in several instances found other shells associated with this species, with small discs not more than 0·20 inch in diameter, attached by the whole surface, as well as by a series of small spines seen radiating from the margin. May not these little bodies be the young of this species?

We think the specimen figured by Prof. Marcou in his work on the Geology of North America, plate 6, fig. 1, as *P. pustulosus*, is the same as the above species, and quite distinct from *P. pustulosus*. It occurs in Kansas at various horizons from No. 14 far down in the upper Coal measures. We found it at Fort Riley and numerous places between there and the Missouri, as well as at Leavenworth city.

Productus Rogersi, Norwood and Pratten, Jour. Acad. Nat. Sci. Phil. N. S. vol. iii, page 9, pl. 1, fig. 3. This species is nearly related to the last, and when the shell is exfoliated, may be easily confounded with it. *P. Norwoodi*, however, appears never to have the distinct concentric wrinkles of this species, nor do the pustules, at the base of the spines have the tendency to elongate into indistinct ribs as in *P. Rogersi*. Prof. Marcou has figured in N. Am. Geol. pl. 5, fig. 6, as *Productus scabriculus*, a shell very like this.

Kansas valley below Mouth Blue river, in upper Coal measures.

Productus pustulosus (?) Phillips' Geol. Yorkshire, vol. 2, p. 316, pl. 7, fig 15. We have a specimen agreeing very nearly with this species in its external markings, but it is much narrower, and the beak of the larger valve more extended, in which respect it differs quite as much from *P. punctatus*.

Near Steam Boat Landing at Leavenworth city, in Coal measures.

Productus Prattenianus, Norwood, Jour. Acad. Nat. Sci. Phil. N. S. vol. 3, p. 17, pl. 1, fig. 10. In Coal measures at Indian creek and at Leavenworth city.

Productus Calhounianus, Swallow, Trans. Acad. Sci. St. Louis, vol. 1, p. 181. This fine large shell is scarcely distinguishable from *P. semireticulatus* var. *antiquus*, but Prof. Swallow, who has seen the interior, thinks it presents well marked internal differences. It occurs in No. 12 and below, at Fort Riley, also on Cotton-wood creek. Prof. S. thinks it even ranges down into the lower Carboniferous.

Chonetes Verneuiliana, Norwood and Pratten, Jour. Acad. Nat. Sci. Phila. vol. 3, p. 26, pl. 2, fig. 6, N. S. Occurs in Kansas in division No. 37, at Manhattan, and perhaps in upper Coal measures at lower horizons.

Chonetes mucronata, Meek and Hayden, Proceed. Acad. Nat. Sci. Phila. Dec., 1838, page 262. Lower part of the section at Fort Riley, (division 9) and down near the base of the foregoing general section, also in same position on Cottonwood creek.

Orthisina crassa, Meek and Hayden, Proceed. Acad. Nat. Sci. Phila. Dec. 1858, p. 261. Occurs in Coal measures near landing at Leavenworth city.

Orthisina umbraculum? Schlot. sp. Petrefakt. 1, p. 256, et 2, p. 67. We find in Kansas, ranging from 16 to 19 of foregoing sections, many specimens of a large species of *Orthisina* having almost exactly the form and other characters of *O. umbraculum*, excepting that the striæ appear to be more numerous. According to Koninck that species has about 108 striæ on each valve, while on our Kansas specimens, we count from 160 to 200; consequently we suspect it may be a distinct but closely allied species; if so, we would propose to designate it by the name of *O. multistriata*. We found it at Fort Riley and at several localities between there and Blue river; also in same position on Cottonwood creek.

Orthisina Missouriensis, Swallow, Trans. Acad. Sci. St. Louis, vol. 1, p. 219. This is a very peculiar plicated species, often much distorted. When partly embedded in the matrix, it frequently bears a striking resemblance to *Plicatula striato-costata*, Cox, 3d vol. Dr. Owen's report on the Geol. Survey of Kentucky, page 558, pl. 8, fig. 7, of Atlas. Common in the upper Coal measures of Kansas, at Leavenworth city and west of there.

Orthisina Shumardiana, Swallow, Trans, St. Louis Acad. Sci. vol. 1, p. 183. Although like the last, a plicated species, this is more symmetrical, and presents other well marked differences. Ranges from No. 11, down some distance in upper Coal measures. Found at Fort Riley and between there and Blue River.

Terebratula millepunctata, Hall, Pacific Rail Road Report, vol. 3, p. 101, plate 2, figs. 1 2. We have the impression that this species is probably identical with *T. bovidens*, Morton (Silliman's Jour. vol. 29, p.) from Ohio. Our Kansas specimens appear, however, to be more elongated than those figures by Dr. Morton, and may be distinct. In form they resemble very much some varieties of *Epithyris elongata*, Schlot. sp. as figured by King, in Perm. Fos. Eng. pl. vi., particularly the narrower varieties, such as fig. 35. The beak of our Kansas shell, however, is not truncate but pointed, the perforation being on the outside, and a little removed from the extremity. If it is identical with *T. bovidens*, Morton's specific name will have to take precedence, being the older. It remains to be determined whether its internal characters agree with *Terebratula*, as now restricted.

This is a rather common form in the upper Coal measures of Kansas, and southward. We found it near the summit of the hills back of Leavenworth city, also at Indian creek near Indianola, &c.

Rhynchonella Uta. (*Terebratula Uta*, Marcou, Geol. N. A., p. 51, pl. vi. fig 12.) We have from the upper Coal measures in Kansas many specimens of a species agreeing exactly with Prof. Marcou's description of the above species. These we suspect may possibly go into the genus *Camerophoria*, King, if not into *Rhynchonella*; at any rate they are certainly not *Terebratula*. We are inclined to the opinion that a shell described by Prof. Swallow, in the Trans. Acad. Sci. St. Louis, vol. 1, page 219, under the name of *Rhynchonella* (*Camerophoria*) *Osagensis*, may be identical also with the above; yet Prof. S. says his species has from "two to six" plications in the sinus of the dorsal valve, while in the shell before us, of which we have quite a number of specimens, there are *invariably* but two plications in the sinus.

Quite common in division No. 94 at Manhattan and at several localities between there and the Missouri, in the Upper Coal Measures. Prof. Marcou, cites it as a mountain limestone species, but we know nothing of its existence in rocks of that age.

Retzia Mormonii. (*Terebratula Mormonii*, Marcou, Geol. N. A., p. 51, pl. vi., f. 11.) We found this species quite abundant in division 37, at Manhattan, where it is associated with the last. It also ranges far below this in the upper Coal measures between Manhattan and the Missouri, being quite common near the summits of the hills back of Leavenworth city. Dr. B. F. Shumard has described a species in the Trans. Acad. Sci. St. Louis, under the name of *Retzia punctilifera*, which we suspect may possibly be a variety of the above; but as he describes it as having usually in the dorsal valve "a moderately wide, shallow sinus, which extends from the front nearly to the beak," and the species before us, of which we have many specimens, has no traces of a sinus, we are left in doubt. In other respects his description agrees exactly with our shell, and he also states that he has it from K. T. Prof. Marcou found this species at the Salt Lake City, Utah, in a rock he refers to the mountain limestone. We have never seen it from below the Coal measures.

Spirifer Kentuckensis, Shumard, Geol. Survey of Missouri, part 2, page 203. Found in upper Coal Measures near the top of bluffs, back of Fort Leavenworth, also near the landing at Leavenworth City, and at other localities between the Missouri and Blue river.

Spirifer cameratus, Morton, American Jour. Sci. vol. 29, p. 150, plate 11, fig 3. This is the same species—as has been determined by Prof. Hall,—described by Dr. Roemer as *S. Meusebachanus.* (Kreid von Texas, p. 88, pl. xi. fig. 7) and subsequently by himself as *S. triplicatus*, in Stansbury's Rept. p. 420, pl. iv. fig. 5. Prof. Marcou has recently figured it in his work on the Geol. North America, page 49, pl. viii. fig. 3, as a variety of *Spirifer striatus*, Martin, from which it is quite distinct. He found it at Pecos Village in a rock he refers to the lower Carboniferous or mountain limestone. It has a great geographical range, being common in the coal Measures from Pennsylvania to the Rocky Mountains, and from Nebraska to New Mexico; we have never seen it, however, from lower Carboniferous rocks.

Spirifer hemiplicata, Hall. Stansbury's report, p. 409, pl. 4, fig. 3. Upper Coal Measures near summit of hills back of Leavenworth, and at other localities between there and Blue River.

Spirifer lineatus. *Anomites lineatus*, Martin. *Spirifer lineatus* of Phillips. Geol. Yorks., 2, p. 219, pl. 10, fig. 17, and of other authors. We have, from near Leavenworth landing, in the coal measures, a Spirifer, apparently identical with the above. It appears not to range very high in the upper coal measures of Kansas.

Spirifer ——. In division No. 12, above Fort Riley, we found a few imperfect specimens of a small, smooth *Spirifer*, similar in some respects, to *S. lineatus*, but apparently more like *Martinia Clannyana*, King, from the Permian of England.

Spirifer planoconvexa, Shumard. Geol. Report, Missouri, 2d part, p. 202. We found this handsome little shell quite abundant in the upper coal measures (divisions 34 and 37,) at Manhattan; also at Juniata, on Big Blue River, and near summit of hills, back of Leavenworth City.

Spirigera subtilita. (*Terebratula subtilita*, Hall. Stansbury's Report, p. 409, pl. 4. fig. 1–2.) *Spirigera subtilita* of Dr. George Shumard. Trans. St. Louis Acad. Sci., vol. i.

This is a very abundant species in Kansas; we found it ranging up, at least as far as division No. 37, at Manhattan, and met with some obscure forms resembling it, still higher in the series. From these horizons, it ranges far down in the other members of the coal measures. Several of our specimens collected at Leavenworth City, show that it was provided with internal spiral appendages, as in the *Spirifer*, and consequently cannot remain in the genus *Terebratula*, as now restricted. It has a wide geographical range, and is almost everywhere the companion of *Spirifer cameratus*. Prof. Marcou figures it in his work on the Geology of North America, pl. vi. fig. 9, from a formation in the Rocky Mountains, which he refers to, the lower carboniferous; but we have never seen it from any position below the coal measures.

Spirigera ——? At Fort Riley, and above there, as well as in the same position on Cottonwood Creek, we found, ranging from division 18 up to 10 of the foregoing section, a *Spirigera* resembling *S. subtilita*, but much more gibbous in form; it also appears to have a much thicker shell. If distinct from *S. subtilita* this might be designated by the specific name *gibbosa*.

LAMELLIBRANCHIATA.

Monotis Hawni, Meek and Hayden. Trans. Albany Inst., vol. iv., March 2, 1858. Prof. Swallow thinks this species not distinct from *M. speluncaria*, Schot sp. Although, like that species, it is quite variable, and some of its varieties are very similar to it; after a careful comparison of a large number of individuals with King's figures and descriptions, we still regard it as distinct. We have never seen any of its various forms with the beak of the larger valve elevated so far above the hinge, as in fig. 5, 6, 7 and 8, pl. 13, of King's work. Nor do any of our specimens possess the peculiar oblique posterior sulcus, seen in the figures cited above. High Country, south of Kansas Falls; also above there, on Smoky Hill River and Cottonwood Creek, in division 10.

Myalina (*Mytilus*) *perattenuata*, Meek and Hayden. Trans. Albany Inst., vol. iv., March 2d, 1858. Our description of this species was made out from one of the more slender varieties of this shell, sent to us from near Smoky Hill River by Mr. Hawn. We were probably wrong, however, in refering to it a specimen in our possession from a locality on the Missouri, opposite the northern boundary of Missouri; and we even suspect the rock from which this latter specimen was obtained may belong to an older epoch.

The species above cited, is we think identical with *M. permianus* of Swallow, Trans. Acad. Sci., St. Louis, vol. i. p. 187. And we also suspect the form he describes in the same paper, as *Mytilus* (*Myalina*) *concavus*, is only a broader variety of the same; at any rate, we have these two forms, and every intermediate gradation between them, from the same bed. Locality and position same as the preceding.

Myalina squamosa. (*Mytilus squamosa*, J. de C. Sowerby. Morris's Catalogue, p. 93. *Myalina squamosa* of some other authors.)

Of the form, we refer with doubt to the above species; we have but one imperfect specimen. As far as the characters can be made out, it agrees with this species. We found it in division No 11, at Kansas Falls, above Fort Riley.

Myalina subquadrata, Shumard. Missouri Geol. Rept., 2d part, p. 207, pl. c., fig. 17. Upper coal measures, Leavenworth City, on the Kansas, at Lawrence and other localities in Kansas Valley, below mouth of Big Blue River.

Edmondia ? Calhouni, Meek and Hayden. Trans. Albany Inst., vol. iv., March 2, 1858. We are still in doubt in regard to the generic relations of this species, having procured no better specimens than that first described by us. We suspect it may be a *Cardinia*. NearSmoky Hill river, in division 10.

Bakevellia parva, Meek and Hayden. Trans. Albany Inst., vol. iv., March 2d, 1858. This is probably the same species referred by Prof. Swallow to *Avicula antiqua*, Munster,—*Bakevellia antiqua* of King, and others. In describing this species, we spoke of its very near relation to *B. antiqua*, but pointed out some characters in which it differs. At that time we had seen but a few imperfect specimens; since then, however, we have obtained many others, a careful examination of which causes us still to regard it as distinct from *B. antiqua*. Of a large number of individuals, we have never seen any one-half the size of the smallest, nor one-eighth the size of the largest figures of that species given by King, while the cardinal area is also proportionably much narrower in our shell. Division No. 10. On Smoky Hill river and cottonwood creek.

Area carbonaria, Cox. Vol. iii. Geol. Report, Ky., p. 567, pl. 8, fig. 5. Our fossil is smaller, and less distinctly striate, but exactly the form of the above. Near Leavenworth landing, coal measures.

Leda subscitula, Meek and Hayden. Trans. Albany Inst., vol. iv. March 2d, 1858. Division No. 10. Smoky Hill river and Cottonwood creek.

Pleurophorus ? subcuneata, Meek and Hayden. Trans. Albany Inst., vol. iv., March 2d, 1858. Our specimens of this species being casts we are left in doubt in regard to its generic relations. We suspect it may be a *Cardinia*. Same locality and position as preceding.

Axinus (*Schizodus*) *ovatus*, Meek and Hayden. Proceed. Acad. Nat. Sci. Phila. Dec., 1858. This is very much like the Permian forms, *S. rotundatus* and *S. truncatus*, but we found it in a rock on Cottonwood creek which we regard as below the Permian.

Axinus rotundatus, Brown. Trans. Manch. Geol. Soc. vol. i. p. 31, pl. 6, fig. 29. We have referred this little shell to the above species with some doubt, but we have seen no characters by which it can be distinguished. No. 10. Near Smoky Hill river.

Allorisma ? Leavenworthensis, Meek and Hayden. Proc. Acad. Nat. Sci., Phila., Dec., 1858, p. 263. Upper coal measures, Leavenworth City.

Allorisma subcuneata, Meek and Hayden. Proceed. Acad. Nat. Sci. Phila. ec., 1858, p. 263. Locality and position same as last.

Allorisma ? altirostrata, Meek and Hayden. Proceed. Acad. Nat. Sci., Phila Dec. 1858, p. 263. Upper coal measures, Grasshopper creek.

Allorismv ? Cooperi, Meek and Hayden. Proceed. Acad. Nat. Sci., Phila. Dec., 1858, p. 264. (*Panopœa Cooperi*, Meek and Hayden. Trans. Albany Inst., vol. iv., March 2,1858.) Near Helena, in upper coal measures.

Leptodomus granosus, Shumard. Trans. Acad. Sci., St. Louis, vol. i. p. 207. Upper coal measures, near summit of hills, back of Leavenworth City; also near Leavenworth landing.

GASTEROPODA.

Pleurotomaria humerosa, Meek and Hayden. Proceed. Acad. Nat. Sci., Phila. Dec., 1858. In upper coal measures, at Grasshopper creek.

Pleurotomaria subturbinata, Meek and Hayden. Proceed. Acad. Nat. Sci., Phila. Dec., 1858, p. 264. Locality and position same as last. In the Proceedings of the Academy above cited, the locality of this species is *erroneously* given as at Helena.

Bellerophon ——? We found a small undetermined species of this genus in division 10. On Smoky Hill river and near Cottonwood creek; also casts of a large species at Leavenworth landing and Grasshopper creek, in the upper coal measures.

Euomphalus ——? The species here alluded to, was found in No. 11 and 37 of the foregoing general section. Either it or a very closely allied species, also ranges far below this, in the upper coal measures. It is nearly related to, if not identical with a species Prof. Hall has described in the Iowa Report, under the name of *E. rugosus.*

CEPHALAPODA.

Nautilus eccentricus, Meek and Hayden. Trans. Albany Inst., vol. iv., March 2d, 1858. Smoky Hill river, division No. 10.

FISHES.

Xystracanthus arcuatus, Leidy. Upper carboniferous rocks at Leavenworth landing.

Cladodus occidentalis, Leidy. Division No. 37 of foregoing general section. At Manhattan.

Petalodus Alleghaniensis, Leidy. Jour. Acad. Nat. Sci. vol. iii. p. 161. Division No. 10, of foregoing general section. Fort Riley.

Catalogue of Birds collected on the Rivers Camma and Ogobai, Western Africa, by Mr. P. B. Duchaillu in 1858, with notes and descriptions of new species.

BY JOHN CASSIN.

The collection made by Mr. Duchaillu on the River Camma or Fernando Vaz and its tributaries, the Ogobai, Rembo, and Ovenga rivers, is the most extensive and interesting yet made by him, or ever yet received from Western Africa, in the Museum of this Academy. The two last names of rivers I have not used in the localities given in the succeeding catalogue, mainly because I have not succeeded in finding them in any geographical work to which I have access, but now state that these names occur in Mr. Duchaillu's letters, and that they appear to be tributaries to the River Camma. Much valuable information will undoubtedly be added to the geography of this part of Western Africa by Mr. Duchaillu.

As in former collections, Mr. Duchaillu has not sent birds of which numerous specimens had already been sent in former collections. This fact will account for the absence of the names of some well known species from the present catalogue.

1. GYPOHIERAX ANGOLENSIS, (Gmelin.)

   Falco angolensis, Gm. Syst. Nat. i. p. 252 (1788.)
   Polyborus hypoleucus, Bennett.

   Gray's Genera, i. pl. 4. Jard. and Selby, Ill. N. S., pl. 13.

   From the Camma and Ogobai. Young, with plumage entirely dull ashy brown, the head only becoming spotted with white. This is the only vulture received from Mr. Duchaillu, and has come in all his collections.

2. POLYBOROIDES TYPICUS, Smith.

   Polyboroides typicus, A. Smith, Ill. Zool. S. Afr. Birds.
   " Polyboroides radiatus, (Scopoli,)" Auct.
   Smith, Ill. S. Afr. Birds, pl. 81, 82.

Adults in fine plumage, from the Camma,—the same species as formerly received in Mr. Duchaillu's collection from the River Muni, and identical with South African specimens. The species from Madagascar, which is *Polyboroides radiatus*, (Scopoli,) and the same as *Falco gymnogenys*, Temm., is smaller and lighter colored, and has the transverse stripes on the abdomen much less numerous and wider apart than in the present bird.

3. Haliaetus vocifer, (Daudin.)
Falco vocifer, Daud. Traite d'Orn, ii. p. 65.
Le Vaill., Ois. d'Afr., i. pl. 4.
From the Camma. Identical with South African specimens.

4. Haliaetus blagrus, (Daudin.)
Falco blagrus, Daud. Traite d'Orn, ii. p. 70.
Le Vaill., Ois. d'Afr. pl. 5.

The synonymes given by authors for this species are rather extended, and I suspect not entirely correct; in fact, perhaps, making a heavy draft on probability. At present I regard *F. blagrus* as a distinct and well characterized species. From the Ogobai, and identical with others from South Africa.

5. Spizaetus coronatus, (Linnæus.)
Falco coronatus, Linn. Syst. Nat., i. p. 124 (1766.)
Falco albescens, Daud. Traite d'Orn. ii. p. 45.

Edwards' Birds, v. pl. 224. Le Vaill Ois. d'Afr., i. pl. 3. Smith, Ill. S. Afr. Birds, pl. 40, 41. Identical with specimens in the Acad. Mus., from South Africa, and in adult plumage. From the Ogabai river.

6. Spizaetus occipitalis, (Daudin.)
Falco occipitalis, Daud. Traite d'Orn., ii. p. 40.
Le Vail, Ois. d'Afr. i. pl. 2.
From the Ogabai river. Adults in black plumage.

7. Spilornis bacha, (Daudin.)
Falco bacha, Daudin.
Falco albidus, Cuvier.
Circaetus melanotis, Verreaux in Hartl. Orn. W. Afr. p. 7 ?
Le Vaill, Ois. d'Afr., i. pl. 15. Temm. Pl. Col., i. pl. 19.

The present specimen is in very light colored plumage, undoubtedly young, and much as described and figured by Cuvier and Temminck, as above cited. It is, however, quite identical with the *bacha* of Southern Africa, of which a very complete series of specimens is in the Academy's Museum. The young is nearly white, though even when fully grown and in a more advanced plumage has the head white, and a large spot of black in the region of the eye and ear. In the last plumage I suspect this bird is the species recently described by our friend, Mr. Verreaux, of Paris, as cited above.

Young ♂. Upper parts white, tinged with yellow, every feather with a subterminal spot of dark brown; lanceolate and ovate on the head and neck; larger and more circular on the back; every feather narrowly tipped with white. Under parts white, with a few spear-heads of brownish black on the breast and sides. Quills and superior wing coverts dark brown; all the quills and every feather of the coverts tipped with white; tail ashy brown, with about six transverse bands of black, and tipped with white. Total length 23 inches; wing 12; tail 10 inches.

Hab.—Ogobai river, a branch of the Camma river, Western Africa.

8. Accipiter Toussenelli, (Verreaux.)
Nisus Toussenelli, Verr. Cab. Jour. iii. p. 101.

Very fine specimens of this handsome Hawk, are now for the first time sent by Mr. Duchaillu. From the Ogobai.

9. Accipiter Hartlaubii, (Verreaux.)
Nisus Hartlaubii, J. Verr. in Hartl. Orn. West Af. p. 15.

Apparently the bird described by that accurate and reliable naturalist Mr. Verreaux, and happily named in honor of the most accomplished living ornithologist of Europe. From the Ogobai.

10. MICRASTUR MACROURUS, (Hartlaub.)
" Astur macrourus, Temm." Hartl. Cab. Jour. 1855, p. 353.

One of the most beautiful of the Falconidæ, and having for its nearest relatives the American birds forming the genus *Micrastur*, G. R. Gray, and especially the larger *M. brachypterus*, (Temminck.) The present specimen is in mature plumage, but is probably a different sex from that described as above, and has the entire under parts of the body dark rufous chestnut. In the description by Dr. Hartlaub, the under parts are given as white, but the difference of the two specimens in color is not greater than, and in fact is similar in some degree to, that of the male and female of *Micrastur brachypterus*.

Adult ♀. Upper parts dark bluish brown; upper tail coverts white; under parts dark reddish chestnut; under wing coverts chestnut; under tail coverts white. Quills ashy brown, white beneath and with transverse bands of black; tail black, tipped with white and with about four irregular narrow bands of white. Throat light cinereous; feathers of the occiput and neck behind white at base. Bill short, strong, rather abruptly curved, cere large; nostrils circular; wings short, rounded, fifth quill longest; tail very long, graduated; feet moderate. Total length about 25 inches, wing 11, tail 15, tarsus 3 inches. From the Ogobai river.

11. AVICEDA CUCULOIDES, Swainson.
Aviceda cuculoides, Sw. B. of W. Afr. i. p. 104, (1837.)
Falco frontalis, Daudin?
Sw. B. of W. Afr. i. pl. 1.

A single specimen in mature plumage from the Camma. If this bird is *Falco frontalis*, Daudin, as stated by the Prince Bonaparte in Conspectus Avium, p. 20, the description and figure of Le Vaillant are amongst the most astonishing aberrations of ornithologists, which is saying much!

12. SCOTOPELIA PELII, (Kaup.)
Ketupa Peli, Kaup. Jard. Cont. 1852, p. 117.
Scotopelia typica, Bonap.

A singular species with naked *tarsi* and nearly related to the genus *Ketupa*. It is well described by Dr. Hartlaub in Cabanis' Journal, 1855, p. 358. From the Camma river.

13. BUBO LEUCOSTICTUS, Hartlaub.
" Bubo leucostictus, Temm." Hartl. Cab. Jour. iii. p. 354.
From the Camma river.

14. SYRNIUM WOODFORDII, (Smith).
Athene Woodfordii, Smith Zool. S. Afr.
Smith, Ill. S. Afr. Aves, pl. 71.
Adults and young of this species from the Camma.

15. CAPRIMULGUS FOSSII, J. Verreaux.
Caprimulgus Fossii, J. Verreaux, in Hartl. Orn. W. Afr., p. 23 (1857.)

This is the only species received from Mr. Duchaillu, and is given erroneously as *C. binotatus* in my catalogue of birds from the river Muni. In adult plumage this species is easily recognized by the white tips of the larger external coverts of the wings, and in nearly all the specimens that I have seen this character can be traced.

Specimens from Borneo and Sumatra in the Acad. Mus. which were received from the Leyden Museum, appear to be the *C. binotatus* of Bonaparte's Conspectus, (i. p. 60) but came labelled " *C. bisignatus* Boie," and seem to be the same as *C. affinis*, Horsfield. It is probable that the present species is *C. concretus*, Bonap. Consp. as just cited. From the Camma and formerly received from the Muni river.

16. Cypselus ambrosiacus, (Gmelin.)
Hirundo ambrosiaca, Gm. Syst. Nat. ii. p. 1051.
Cypselus parvus, Licht. Verz. p. 58.
Temm. Pl. col. 460, fig. 2.

All the specimens that I have ever seen from Western Africa are darker colored than others from Eastern Africa and Madagascar in the Acad. Mus. In other respects they are very similar, and I cannot distinguish them specifically. From the Camma and Ogobai rivers.

17. Chaetura Sabinei, (Gray.)
Acanthylis Sabinei, Gray in Griff. Cuv. ii. p. 70.
Chætura bicolor, Gray, Zool. Misc. p. 6.
Pallene leucopygia, Boie, Isis, 1844, p. 168.
From the Camma.

18. Atticora melbina, Verreaux.
Atticora melbina, J. & E. Verreaux, Mag. et Rev. Zool. 1851, p. 310.
From the Camma and formerly received from Cape Lopez.

19. Atticora nitens, Cassin.
Atticora nitens, Cassin, Proc. Acad. Philada. 1857, p. 38.

Several specimens show no other characters than as above described. From the Ogobai.

20. Hirundo cahirica, Lichtenstein.
Hirundo cahirica, Licht. Verz. p. 58.
Hirundo Boissoneauii, Temm.

A single specimen from the Camma river. Very light colored on the under parts of the body but apparently this species.

21. Hirundo nigrita, G. R. Gray.
Hirundo nigrita, Gray, Genera of Birds i. p. 58, (1845.)
Gray, Gen. i. pl. 20.

This fine species seems to indicate a distinct subgeneric group, having the bill and general form of typical *Hirundo* with a shorter tail. Its color too, pure black with the throat white, are quite characteristic. It does not appear to be a common species, a few specimens only having been received from the Camma.

In this species the white spot on the throat is much larger in the adult than is represented in Mr. Gray's plate above cited, inner webs of tail feathers white, except at the ends, all other parts lustrous metallic purplish black.

22. Cecropis Gordoni, (Jardine.)
Hirundo Gordoni, Jard. Contr. Orn. 1851 p. 141.

This is a quite distinct and well characterized species of the same group as the large *C. senegalensis*. Received for the first time in the collection from the Ogobai river.

23. Eurystomus afer, (Latham.)
Coracias afra, Lath.
Eurystomus purpurascens et rubescens, Vieill.
Colaris viridis, Wagler, Syst. Av.
Le Vaill. Ois. Par., pl. 35.
From the Ogobai. Rather smaller than specimens from Sierra Leone.

24. Eurystomus gularis, Vieillot.
Eurystomus gularis, Vieill. Nouv. Dict.
Le Vaill. Ois. Par., pl. 36.
From the Ogobai.

25. Halcyon senegalensis, (Linnæus.)
Alcedo senegalensis, Linn. Syst. Nat. i. p. 180 (1766.)
Buff. Pl. Enl. 594. Swains. Zool. Ill., pl. 27.
From the Camma.

26. Halcyon Dryas, Hartlaub.
Halcyon Dryas, Hartl. Cab. Jour. 1854, p. 2.
Von Muller, Beitr. Orn. Afr., pl. 11.

Perhaps the most handsome species of Kingfisher of Western Africa, and of the same group as *H. cinereifrons*. From the Camma river.

27. Halcyon badia, Verreaux.
Halcyon badia, J. & E. Verreaux, Rev. et Mag. Zool. 1851, p. 264.
From the Ogobai.

28. Alcedo quadribrachys, Bonaparte.
"Alcedo quadribrachys, Temm." Bonap. Consp. Av. i. p. 158.
Jard. Contr. Orn., 1851, pl. 79.
From the Camma.

29. Corythornis cæruleocephala, (Gmelin.)
Alcedo cæruleocephala, Gm. Syst. Nat. i. p. 449 (1788.)
Quite identical with specimens from Southern Africa. From the Camma.

30. Ceryle rudis, (Linnæus.)
Alcedo rudis, Linn. Syst. Nat. i. p. 181.
Ispida bicincta, Swains. B. of W. Afr. ii. p. 95.
From the Camma and Ogobai.

31. Merops variegatus, Vieillot.
Merops variegatus, Vieill. Ency. Meth. p. 390.
Merops cyanipectus, Verr. Rev. et Mag. Zool. 1851, p. 269.
Le Vaill. Guep., pl. 7.
Evidently an abundant species on the Camma and Ogobai rivers.

32. Merops albicollis, Vieillot.
Merops albicollis, Vieill.
Merops Cuvieri, Licht. Verz. p. 13.
Le Vaill. Guep., pl. 9.

Rarely received in Mr. Duchaillu's collections, and seems to be more numerous further north. From the Ogobai.

33. Merops bicolor, Daudin.
Merops bicolor, Daud., Ann. du Mus., ii. p. 440, pl. 62, fig. 1.
Merops malimbus, Shaw, Nat. Misc. xvii. pl. 701.
Vieill. Gal. i. pl. 186. Le Vaill. Guep., pl. 5,

Frequently received in Mr. Duchaillu's collections. From the Camma and Rembo rivers.

34. Meropogon Breweri, nobis.

Large, bill compressed, curved, wings rather short, fourth quill longest, first quill short, tail rather long, the two in the middle much the longest and attenuated at the end, others truncate or emarginate at the tips, all the secondary quills emarginate at the tips, feathers of the throat and neck in front somewhat lengthened. Total length about 13½ inches, wing 4¾, tail 7½, bill from corner of mouth direct to tip of upper mandible 2 inches, middle tail feathers 7½, outer 4½ inches.

Head glossy black, back, wings and middle tail feathers green, under parts fine reddish fulvous with a tinge of green, a transverse band of chestnut on the breast immediately below the long black feathers of the neck. Quills green, inner edges of primaries black, of secondaries rufous, tail feathers (except two in the middle) fine dark chestnut, and tipped with green. Bill black, feet light colored.

Hab.—Ogobai river, a branch of the Camma river, Western Africa. Discovered by Mr. P. B. Duchaillu.

This very handsome bird seems to belong to the genus *Meropogon*, Bonap. Consp. Av. i. p. 164, being in fact a large *Mellitophagus*, with the feathers of the throat and neck lengthened, though not so distinctly as in *Nyctiornis*. It is easily distinguished from all other species by its colors, and especially by its black head, which color terminates abruptly on the breast and is succeeded by a band of dark chestnut. It is nearly as large as *Nyctiornis amictus* or *Athertoni*.

It is with great gratification that I dedicate this fine bird to my valued and constant friend Thomas M. Brewer, M. D., of the city of Boston, one of the most distinguished of American ornithologists.

35. Meropiscus gularis, (Shaw.)
Merops gularis, Shaw, Nat. Misc. ix. pl. 337 (1798.)
Gray, Gen. i. pl. 30.

Apparently of frequent occurrence in the country on the Camma and Ogobai. The adult of this species is very handsomely figured by Mr. Gray as above, but the young bird is quite different, and might readily be mistaken for a distinct species. Young ♂. Entire upper parts, throat and breast dark green, on the throat mixed with a few red feathers, rump light blue, abdomen and under tail coverts blue; quills black with a spot of chestnut at the base of the secondaries, tail black, bill black, shorter than in adult.

36. Apaloderma narina, (Vieillot.)
Trogon narina, Vieill.
Gould, Monog., pl. 26.

From the Camma river, and formerly received from the river Muni. Young ♂. Upper parts like the adult, but with the throat and breast light ashy, a few feathers only green at the end, abdomen pale rose-red, upper mandible dark brown, under mandible yellow.

37. Nectarinia fuliginosa, (Shaw.)
Certhia fuliginosa, Shaw, Gen. Zool. viii. p. 223.
Vieill. Ois. dor., pl. 20, Nat. Lib. Sunbirds, pl. 14.

From the Camma, and formerly received from the Moondah river. The very peculiar color given as "fuliginous" by authors, assumes a variety of shades in this species, apparently depending on age and season. It is frequently very pale, giving the entire bird a dull brownish yellow or ochre color, and the metallic violet of the rump is frequently wanting.

38. Nectarinia angolensis, (Lesson.)
Cinnyris angolensis, Lesson, Traite d'Orn. i. p. 295.
Nectarinia Stangeri, Jardine, Ann. Nat. Hist. x. p. 187, pl. 13.
Jard. and Selb. Ill. Orn., N. S., pl. 48.

From the Muni, Moondah and Camma rivers, and evidently of frequent occurrence in this region of Western Africa. Young ♂. Upper parts dull dark brown, a few metallic violet feathers in front, throat lustrous metallic green, succeeded by a band of violet and scarlet on the breast. Abdomen dull yellowish with longitudinal and irregular stripes of brownish black, wings and tail dark brown.

39. Nectarinia chloropygia, Jardine.
Nectarinia chloropygia, Jard. Ann. Nat. Hist. x. p. 188, pl. 14.
Cinnyris chalybea, Swains. B. of W. Africa, ii. p. 132.
Jard. and Selb., Ill. N. S., pl. 50, Swains. Zool. Ill., pl. 95.

Apparently one of the most abundant species of Equatorial Africa, and received in all Mr. Duchaillu's collections. Yonng ♂. Upper parts yellowish green, a few feathers tipped and edged with metallic golden green, under parts yellow, mixed with dark green on the throat, and scarlet on the breast.

From the Moonda, Muni, and Camma rivers.

40. Nectarinia cuprea, (Shaw.)
Certhia cuprea, Shaw. Gen. Zool. viii. p. 201, (1811.)
Cinnyris erythronotus, Swains. B. of W. Africa, ii. p. 30, pl. 15.
Vieill. Ois. Dor., pl. 23, 27.

Evidently not very common in the countries traversed by Mr. Duchaillu. Adult ♀. Upper parts olive, tinged with yellow on the rump, under parts greenish yellow, darker on the throat and breast, the yellow more clear on the abdomen.

From the Camma.

41. NECTARINIA CYANOCEPHALA, (Vieillot.)
Certhia cyanocephala, Vieill.
Cinnyris chloronota, Swains. B. of W. Africa, ii. p. 136, pl. 16.
Nectarinia obscura, Jard. Nat. Lib. Birds, xiii. p. 253, (1842.)
Vieill. Ois. Dor., pl. 7.

This appears to be an abundant species in Equatorial Africa on the Atlantic, and seems to have a wide diffusion. Young ♂. Like the female, but with the under parts more strongly tinged with yellow, and with the top of the head dark brown. In this species the young birds have the under mandible white at base, and frequently for half or two-thirds of its length, which is not the case in the allied species immediately succeeding (*N. cyanolæma*). From the Camma and Ogobai, and formerly received from the Moonda and Muni rivers.

42. NECTARINIA CYANOLAEMA, Jardine.
Nectarinia cyanolaema, Jard., Contr. Orn. 1851, p. 154.

Young ♂. Upper parts dark olive, tinged with yellow, under parts pale yellowish green, with obscure spots of dark green, nearly black on the throat. Bill always black. From the Camma, and formerly received from the Moonda river.

43. NECTARINIA REICHENBACHII, Hartlaub.
Nectarinia Reichenbachii, Hartl. Orn. W. Africa, p. 50.

Several specimens from the Camma appear to be this species, though rather larger than as given by Dr. Hartlaub, as above. Young ♂. Like the female, but with the throat, abdomen and under tail coverts yellow, the former with a few lustrous metallic green feathers.

44. NECTARINIA TEPHROLAEMA, Jardine.
Nectarinia tephrolaema, Jard., Contr. Orn., 1851, p. 154.

From the Ogobai and Moonda rivers. The description of the female given by Dr. Hartlaub applies to young males in the present collection, but unfortunately I am not fully assured of the correctness of the supposed females of this species in this collection, and do not therefore describe with confidence. The specimens alluded to are entirely dark ashy, (about the color of the throat in the male,) darker above and lighter on the under parts.

This appears to be a rare species in Equatorial Africa, and is remarkable in having the throat pale cinereous, though surrounded with a large space of brilliant metallic green. It is probably the type of a subgenus and does not belong to the same group as the preceding (*N. cyanolaema,*) though given so, erroneously, by Dr. Reichenbach in his genus *Anthodiæta*. This author is, however, not acquainted with the genera of birds.

45. NECTARINIA SUBCOLLARIS, Reichenbach.
Nectarinia subcollaris, Reich.
N. metallicus, Licht.?
N. collaris, (Vieill.) ?

Specimens in the collection are evidently the species intended by the name here adopted; but with numerous specimens before me purporting from European labels to be *N. collaris* and *N. metallicus* I am under the necessity of entertaining a suspicion that all are identical. These specimens are perhaps not correctly labelled, but at present my leisure does not warrant an extended examination. These species are assuredly very nearly related. From the Camma.

46. NECTARINIA VERTICALIS, (Reichenbach.)
Leucochloridia verticalis, Reich.
"Nectarinia Vieilloti, Verreaux." Label of spec. in Acad. Mus.
Vieill. Ois. Dor., pl. 25.

An obscure species, of which two specimens only are in the collection from Mr. Duchaillu, one in the present collection and another formerly from the Moonda. In the Acad. Mus. are several specimens from the Rivoli collection, all of which are labelled " *Cinnyris cyanocephala*, ♀." It may be that species in immature plumage, or in the plumage of the rainy season.*

47. Anthreptes Fraseri, Jardine and Selby.
Anthreptes Fraseri, Jard. and Selb., Ill. Orn. N. S. pl. 52, (1843.)

Several specimens of this species are in the present collection from the Camma and Ogobai. The adult is well represented and described in the work cited above, though in the figure the tail is quite erroneous. The middle feathers of the latter are greenish yellow, which is also the color of the outer webs, and a large portion of the inner webs of all the other feathers of the tail. ♀ Smaller than the male but very similar in colors. Young ♂. Like the female, but with the colors duller and of darker green in all the plumage, no axillary tufts.

48. Anthreptes aurantia, Verreaux.
Anthreptes aurantia, Verr. Rev. et Mag. Zool. 1851, p. 417.

The adult male is described by our valued friend as above cited, and the type of his description is now in the Museum of this Academy. The female is so entirely different that it might readily be regarded as a distinct species. Adult ♀. Upper parts lustrous metallic dark green, purple on the rump and tail, throat and breast pale ashy, abdomen pale yellow. A stripe of white through and behind the eye. Young ♂. Upper parts dull yellowish green, under parts pale yellow, tinged with very pale ashy on the throat, very distinct stripe of pale yellowish white through the eye, tail metallic green, outer feathers tipped with dull white. From the Camma and Ogobai.

49. Drymoica ruficeps, (Rüppell.)
Malurus ruficeps, Rüpp. Zool. Atlas, p. 54, (1826.)
Rüpp. Zool. Atlas, pl. 36, fig. 1.

Several specimens from the Camma and Ogobai seem to be this species, but are rather larger than South African specimens in the Acad. Mus.

50. Drymoica nævia, Hartlaub.
Drymoica nævia, Hartl. Orn. W. Afr. p. 56.

A single specimen from the Camma and another in a former collection from Cape Lopez, appear to be this species, though not in adult plumage. Related to the preceding, but larger and with the bill much stronger; and also related to the succeeding.

51. Drymoica fortirostris, Jardine.
Drymoica fortirostris, Jard. Contr. Orn. 1852, p.60.
Drymoica robusta, Rüppell, Syst. Uebers. p. 35, pl. 13?

From the Camma and formerly received from Cape Lopez. In a young bird the bill is pale yellow, except the tip of the upper mandible. The birds regarded by me as the present species and the preceding (*D. nævia*) are both nearly related to *D. robusta*, Rüppell, Syst. Ueb. pl. 13.

52. Drymoica lateralis, Fraser.
Drymoica lateralis, Fras. Proc. Zool. Soc. London, 1843, p. 16.

Numerous specimens from the Camma, Moonda and Muni rivers appear to be this species, though utterly impossible to determine satisfactorily from the published descriptions. It seems to be the most abundant species of this genus in Equatorial Western Africa.

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*Two other species complete the *Nectariniæ*, found by Mr. Duchaillu :
1. Nectarinia superba, (Vieillot), from the river Muni.
2. Nectarinia Johannæ, Verreaux, from the river Moonda.

Genus Euprinodes, nobis.

Size small, bill rather long, slightly curved, nostril large, wings short, first quill spurious, fourth and fifth longest and nearly equal, tail rather long, graduated, legs moderate, slender. More nearly related to *Prinia*, (*P. familiaris*) than to either of the preceding species of *Drymoica.*

53. Euprinodes rufogularis, (Fraser.)

Drymoica rufogularis, Frazer, Proc. Zool. Soc. London, 1843, p. 17.

Fraser, Zool. Typ. pl. 42, fig. 1.

A very pretty and well marked little bird now for the first time received from the Camma. Mr. Fraser's figure seems to represent a bird not mature, but the species is easily recognized by its rufous throat and white tail feathers.

54. Euprinodes olivaceus, (Strickland.)

Prinia olivacea, Strickl. Proc. Zool. Soc. London, 1844, p. 99.

The species to which I apply this name is labelled by Mr. Duchaillu as distinct, but no one of several specimens is mature, though agreeing precisely with the description cited above. I am not without a suspicion that this bird is the young of the preceding. From the Camma.

55. Euprinodes schistaceus, nobis.

Strictly congeneric with the two preceding. Head, breast and entire upper parts bluish cinereous, with a slight tinge of olive on the back; abdomen, under wing coverts and under tail coverts, white. Quills brownish black, four middle tail feathers brownish black, with obscure tranverse narrow stripes of a darker shade of the same color, four external tail feathers on each side, pure white, bill black, legs light colored. Total length about 4¼ inches, wing 1¾, tail 2 inches.

Hab.—River Camma, Western Africa. Discovered by Mr. P. B. Duchaillu.

The preceding three species are very similar in their general organization, and form a very natural group. All have the outer tail feathers white. The present species is easily recognized by the entire head and upper breast being bluish ashy, which color is abruptly succeeded by white on the lower part of the breast. One specimen only, labelled as an adult male, is in the collection from the Camma.

56. Camaroptera tincta, (Cassin.)

Syncopta tincta, Cassin, Proc. Acad. Philada. vii. p. 325, (1855.)

The adult is described by me as above. In the present collection are specimens that we regard as the young, and so different from the adult that for the first time we perceive this to be rather a difficult species. Young.—Upper parts yellowish olive green, under parts cinereous, mixed with yellow on the breast and sides, tibiæ greenish ochre yellow, under wing coverts and edge of wing at shoulder, dull yellow. Younger.—Entire plumage yellowish olive green, paler on the under parts and nearly white on the abdomen, tibiæ brownish ochre yellow, edge of wing and under coverts yellow. The last plumage much resembles that of *C. concolor*, Hartlaub.

From the Camma and formerly from the Muni and Cape Lopez.

57. Camaroptera superciliaris, (Fraser.)

Sylvicola superciliaris, Fraser, Ann. and Mag. Nat. Hist. xii. p. 440, 1843.

Prinia icterica, Strickland, Proc. Zool. Soc. London, 1844, p. 100.

Evidently the bird described by both of the authors here cited, but only ascertained to belong to this genus on inspection of the original specimen by Dr. Hartlaub. (Ann. and Mag. Nat. Hist., 1858, p. 470). A single specimen from the Camma.

58. Camaroptera caniceps, nobis.

About the size of *C. tincta*, but rather smaller than *C. superciliaris*, and strictly congeneric with both species. Head above and cheeks light cinereous, other upper parts yellowish olive. Breast with a wide transverse band of yellow, throat and abdomen white. Quills brownish black, edged externally with olive, tail dark olive, with an obscure subterminal band of brownish black, and outer feathers narrowly tipped with white. Under wing coverts, under tail coverts and *tibiæ* ashy white. Bill bluish black, legs light colored. Total length about 4½ inches, wing 2, tail 1¾ inches.

Hab.—Camma River, Western Africa. Discovered by Mr. P. B. Duchaillu.

This handsome and rather singular species may be easily recognized by its yellow breast, which color assumes the form of a wide transverse band and contrasts strongly with the white color of the throat and abdomen. One specimen only which is a male adult is in the collection from the Camma.

59. CAMAROPTERA BADICEPS, (Fraser.)

Sylvia badiceps, Fraser, Proc. Zool. Soc., London, 1842, p. 144.

The form and general characters of this bird are more those of the genus *Camaroptera* than of *Drymoica*, but it is very probably the type of a distinct generic or subgeneric group. It is a strongly marked species. From the Camma and formerly from the Moonda and Cape Lopez.

60. STIPHRORNIS ERYTHROTHORAX, Hartlaub.

"Stiphrornis erythrothorax, Temm." Hartl. Cab. Jour. iii. p. 355 (1855.)

Three specimens only of this beautiful bird are in the collection from the Camma, and are labelled as males. The adult is described by Dr. Hartlaub as above. Young ♂. Upper parts, including head, dull olive, cheeks ashy spot in front of the eye, white. Throat and breast dull yellowish, every feather edged with ashy black, abdomen white.

61. PRATINCOLA SALAX, Verreaux.

Pratincola salax, J. & E. Verreaux, Rev. et Mag. Zool. 1851, p. 307.

From the Camma and formerly received in Mr. Duchaillu's collections from Cape Lopez.

62. SYLVIETTA VIRENS, nobis.

"Sylvietta microura, Rüppell," Cassin, Cat. B. from Cape Lopez. Proc. Acad. Philada., 1856, p. 318.

Small, tail very short, legs long, slender, feathers of the back and rump long. Head above dark greenish brown, back, wings and tail olive green. Line over the eye, throat and breast light rufous, abdomen white tinged with yellow in the middle, flanks ashy, tibiæ dark yellowish green (ashy brown in young birds) under wing coverts yellow, quills light brown edged externally with greenish yellow. Bill light brown, under mandible nearly white, legs light colored. Total length from tip of bill to end of tail about 3 inches, wing 1¾, tail ¾, tarsus ¾ inches. Sexes alike, female rather smaller.

Hab.—Camma river and Cape Lopez, Western Africa. Discovered by Mr. P. B. Duchaillu.

Having now several specimens, adult and young, and of both sexes of this curious little bird, and various "Crombecs" also from Africa,* I cannot jus-

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* The two species of *Sylvietta* in the Acad. Mus. seem to be as follows :

1. SYLVIETTA RUFESCENS, (Vieillot.)

Dicœum rufescens, Vieill. Nouv. Dict. ix., p. 407 (1817.)

Sylvietta crombec, Lafresnaye, Rev. Zool. 1839, p. 258.

Le Vaill. Ois. d'Afr. iii. pl. 135.

Specimens from various localities in Southern Africa, also from "Elephant's Bay, Western Africa." The latter were collected and presented by A. A. Henderson, M. D., Surgeon U. S. Navy.

2. SYLVIETTA BRACHYURA, Lafresnaye.

Sylvietta brachyura, Lafr. Rev. Zool. 1839, p. 258.

"Sylvietta brevicauda, De La Fresnaye." Name on plate in Lefebvre's Voy. Abyssinia.

Troglodytes microurus, Rüppell, Neue Wirbelth. Abyss. Voeg. p. 109 ?

Lefebvre, Voy. Abyss. Ois. pl. 6. Rüpp. Neue. Wirbelth. Voeg., pl. 41, fig. 1 ?

Much smaller than the preceding and more uniformly colored on the under tify my former conclusion that the species is identical with Rüppell's *Troglodytes micrurus*, Neue Wirb. Abyss. pl. 41, fig. 2. The upper parts of the body are constantly clear yellowish olive, with the head above dark brown, throat and breast only rufous, abdomen white with a yellow tinge in the middle. It is clearly not the bird figured in Lefebvre's Abyssinia Ois., pl. 6, which is in the Acad. Coll. labelled "Senegal." The present bird has the bill shorter and less curved, and the wings and even the tail shorter than in either of the species of *Sylvietta* now before me. It may, indeed, indicate a distinct generic or subgeneric group.

Genus Hylia, nobis.

Small, in general appearance sylviform. Bill curved, upper mandible thick or wide on the lateral view, compressed towards the end, carinated, nostril in a large membrane. Wing moderate, first quill spurious, third and fourth longest and nearly equal, tail rather long, legs moderate, tarsus with about four large scales in front, toes slender, claws rather large. Type *Sylvia prasina*, Cassin.

63. Hylia prasina, (Cassin.)
Sylvia prasina, Cassin, Proc. Acad. Philada. 1845, p. 325.
"Stiphrornis superciliaris, Temm. Mus. Lugd." ?

This bird is by no manner of means a *Stiphrornis*, if *S. eryththrothorax* is the type, which appears to be the case, nor is it a *Chloropeta* of which *C. natalensis*, Smith, is the type, nor moreover do we know any other genus to which it belongs, and so set up for ourselves as best we may. Numerous specimens from the Camma and the Moonda.

64. Phyllopneuste umbrovirens, (Rüppell) ?
Sylvia (Ficedula) umbrovirens, Rüpp. Neue. Wirb., p. 112?

Two specimens in immature plumage, exceedingly like *S. sibillatrix* and *S. icterina* of the Acad. Coll. These specimens are much as described by Rüppell as above. From the Camma.

65. Cisticola cursitans, (Franklin.)
Prinia cursitans, Frankl. Proc. Zool. Soc. London, 1841, p. 118.
Sylvia cisticola, Temm. ?
Gould B. of Eur., pl. 113. ?

Several specimens now received from the Camma are scarcely different from the bird of Europe or that of Asia. Specimens from the Cape of Good Hope and from Northern Africa, strictly the same as the present specimens so far as I can see, are in the Acad. Coll. They rather more closely resemble Asiatic specimens, but are scarcely different specifically from those of Southern Europe.

Genus Parmoptila, nobis.

Allied to *Pardalotus*. Size small, bill thick, rather wide at base, depressed, curved. Wing moderate, first quill spurious, second and third longest, tail moderate, legs rather strong, toes moderate, claws strong. Feathers of the head and throat in the present species, scale-like.

66. Parmoptila Woodhousei, nobis.

♂. Head and throat covered with rounded scale-like feathers, which are rufous, lighter on the throat, brighter and nearly brick-red on the forehead. Back, wings and tail light umber brown with a slight tinge of greenish on the back, quills brownish black edged internally with reddish white. Entire under parts (except the throat) white, thickly spotted with brownish black. Bill bluish black, legs yellowish white (in skin.)

♀. Upper parts including head, brown tinged with olive, under parts

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parts of the body. Possibly the birds represented in the two plates cited may not be identical. The species described by Lafresnaye as above, is labelled "Senegal."

lighter, nearly white on the abdomen, with obscure traces of the black spots of the male. No rufous on the head nor throat. Total length, ♂ about 4 inches, wing 2, tail 1½ inches. ♀ Total length, 3¾ inches.

Hab.—River Camma, Western Africa. Discovered by Mr. P. B. Duchaillu.

This is the only bird from Western Africa that I have ever seen which belongs to the *Pardalotinæ*. It is easily distinguished specifically by its rufous head and throat and spotted under parts, and is a very curious and handsome little bird.

This bird is named in houor of my friend Samuel W. Woodhouse, M. D., of this city, an accomplished and promising young naturalist and scientific traveller in the western countries of the United States.

67. ÆGITHALUS FLAVIFRONS, Cassin.

Ægithalus flavifrons, Cassin, Proc. Acad. Philada. 1855, p. 325.

Proc. Acad. Philada. 1858, pl. 1, fig. 2.

The male is described and figured by me as above. In the collection from the Camma are females which are very similar to the males but rather smaller and lighter colored. Both sexes have the forehead yellow.

68. MOTACILLA CAPENSIS, Linnæus.

Motacilla capensis, Linn. Syst. Nat. i. p. 333 (1766.)

Le Vaill. Ois. d'Afr., pl. 178. Kittl. Kupf., pl. 20, fig. 2.

The first appearance of this species in the fauna of Western Africa. Several specimens from the Ogobai are not to be distinguished from others in the Acad. Mus. from Southern Africa.

69. ANTHUS GOULDII, Fraser.

Anthus Gouldii, Fras. Proc. Zool. Soc. London, 1843, p. 27.

Numerous specimens, impossible to determine conclusively from the short and imperfect descriptions. From the Camma and formerly received in every collection from Mr. Duchaillu.

Genus MACROSPHENUS, nobis.

General aspect of *Orthotomus* (*O. sericeus*, Temm.) and *Ramphocænus* (*R. melanurus*, Vieill,) but with the bill stronger, wider laterally and more compressed, and with the legs and feet stronger. Bill long, rather strong, straight, wide at base, compressed towards the end, upper mandible carinated, curved and distinctly notched at the tip, nostril in a large membrane, under mandible rather thick, somewhat curved in its outline, ascending towards its tip. Wing moderate, first quill spurious, fourth, fifth and sixth longest and nearly equal, tail moderate or rather short, legs moderate, claws rather strong, curved.

This genus, which I propose for the species immediately succeeding, is exactly that of a bird in the Rivoli collection now in the Museum of this Academy, labelled "Ramphocene vert, *Ramphocenus viridis*, Madagascar." The handwriting of this label I am not acquainted with, but the same specimen bears another label of locality only: "Madagascar," which I suppose to be in the handwriting of Mons. Victor Massena, and having his initials appended. This bird may be *Ramphocænus viridis*, Lesson, Traite d'Orn, p. 377, but which is stated by M. Lesson to be a species of Brazil.*

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* MACROSPHENUS VIRIDIS, (Lesson ?)

Ramphocænus viridis. Lesson, Traite d'Orn. i. p. 377, (1831) ?

Larger than the species above described. Bill long, strong, straight, a few pairs of slender bristles at the base of the upper mandible, wings and tail proportionately rather longer than in the above species. Entire upper parts olive green, darker on the head and tinged with yellow on the back. Throat, breast and middle of the abdomen yellow, sides, flanks, tibiæ and under tail coverts yellowish green, nearly the color of the back. Under wing coverts yellow, quills brownish black, secondaries edged internally with light reddish, tail dark olive green. An obscure stripe of yellowish in front of the eye. Bill light brown or horn color, legs light colored. Total length about 7 inches, wing 2¼, tail 3, bill, from gape, 1¼, tarsus 1 inch.

Hab.—Madagascar. (Rivoli collection label,) Spec. in Mus. Acad. Philada.

70 Macrosphenus flavicans, nobis.

Bill long, straight, curved at the tip, and with a distinct notch. Head above dark greenish cinereous, throat and neck in front light cinereous. Body above light olive green, below greenish yellow inclining to saffron yellow on the flanks, tibia yellow, mixed with cinereous in its lower third. Under wing coverts silky white, quills brownish black, edged externally with ashy olive, tail olive green, darker on the inner webs. Bill bluish horn color, under mandible white at base, and viewed from below, having a longitudinal stripe of white throughout its length, legs light colored. Total length about 5 inches, wing 2¼, tail 1¾, bill from gape ⅞, tarsus ⅞ inches.

Hab.—Camma River, Western Africa. Discovered by Mr. P. B. Duchaillu.

The affinities of this bird, and that alluded to above, as probably from Madagascar, I have not satisfactorily determined. The general aspect is that of *Orthotomus* and *Ramphocœnus*, as stated above, but they appear also to be related to *Tatare*, Lesson, and in fact have the bills very similar to that of *Tatare luscinius* or *Thryothorus luscinius*, Quoy et Gaim. Voy. Astrolabe, Ois. pl. 5. At present my opinion is that they belong to the group *Troglodytinæ.*

Several specimens of this bird are in the collection from the Camma, all of which are labelled as males.

71. Turdus pelios, Bonaparte.

Turdus pelios, Bonap. Consp. Av. i. p. 273, (1850.)

Though with numerous specimens before me, of both sexes and various ages, I rely on labelled specimens in the Acad. Mus. more than descriptions in the determining of this species. The specimens alluded to are labelled in the handwriting of that very competent naturalist, Mr. Jules Verreaux, and are quite identical with those in the present collection. This species is nearly related to *T. libonyanus*, Smith, of Southern Africa, and appears to be abundant on the Camma, Moonda and Muni rivers.

72. Cossypha poensis, Strickland.

Cossypha poensis, Strickl. Proc. Zool. Soc. London, 1844, p. 100.

Fraser, Zoöl. Typ. pl. 37.

Specimens from the Camma which seem to be the species described and figured as above, in adult plumage.

73. Cossypha verticalis, Hartlaub.

Cossypha verticalis, Hartl. Beitr. Cab. Jour. 1855, p. 22.

Petrocincla albicapilla, Swains. B. of W. Afr. i. p. 284, pl. 32?

The only specimens that I have ever seen from Equatorial Africa are in the collection from the Camma, and are darker in the color of the upper parts of the body than specimens from Senegal in the Acad. coll. In fact I would describe the back and wing coverts in these specimens as black in the adult and brownish black in the young, though, in other respects, specimens from the localities mentioned are very similar.

74. Geocichla compsonota, nobis.

About the size and general form of *Turdus interpres*, Temm. Pl. Col. 458, but does not resemble that species in colors. Tail short, wings moderate, first quill spurious, fourth and fifth longest, legs rather strong, toes rather long, bill straight, rather thick, upper mandible curved at the tip and distinctly notched. Head above, cheeks and small space on the chin dark cinereous, upper parts of body and wing coverts bright rufous, quills brownish black, the two first edged externally with dark cinereous, others and especially the shorter quills widely edged with the same bright rufous as the back, tail brownish black, outer feathers edged with rufous. Under parts (except a small space on the chin) white, tinged with dull yellowish brown on the breast and flanks. Bill bluish black, legs pale yellowish (in dried skin.) Total length about 6½ inches, wing 4¾, tail 2½, tarsus 1, bill from gape ⅞ inches.

Hab.—Camma river, Western Africa. Discovered by Mr. P. B. Duchaillu.

This bird is, so far as I can see, exactly the same genus as the Asiatic *T. interpres* alluded to above, and is about the same size. It is not a very good *Geocichla*, of which *T. citrinus* is the type, but not a remote relative. One specimen only in adult plumage is in the collection from the Camma.

Genus Alethe, nobis.

General form and aspect of *Napothera*, but with the bill thicker, the bristles at the base of the upper mandible weaker and shorter, and in general characters more approaching *Cossypha* and *Geocichla*. Wing rather long, first quill short, fourth and fifth longest, tail moderate, legs rather strong.

75. Alethe castanea, (Cassin.)
Napothera castanea, Cassin, Proc. Acad. Philada. 1856, p. 158.

The adult is described by me as above from the river Moonda, and in the present collection are intermediate and young specimens, the latter entirely different from the adult, so much so indeed that were it not for more advanced or intermediate specimens it would scarcely be suspected of being the same species. They bear some resemblance to the young of *Petrocincla.*

Young ♂. Upper parts dark fuscous tinged with rufous on the rump and every feather having an oblong or ovate central spot of light yellowish rufous, wider on the back and wing coverts, narrower on the head. Under parts dull yellowish rufous, many feathers on the breast edged with black, wings and tail as in the adult.

Several specimens from the Camma and formerly from the Moonda.

76. Oriolus Baruffii, Bonaparte.
Oriolus Baruffii, Bonap. Consp. Av. i. p. 347, (1850.)
"Oriolus intermedius, Temm." Hartl.

Several specimens in the collection from the Camma and formerly received from the Moonda.

77. Oriolus nigripennis, Verreaux.
Oriolus nigripennis, Verr. Cab. Jour. 1855, p. 105.

Specimens from the Camma and formerly from the Moonda.

Genus Trichophorus, Temminck, Pl. Col. iii. (liv. 14, about 1821.)

Type *T. barbatus*, Temm. Pl. col. 88. Bill strong, curved, rather wide at base, nostril in a large cavity, aperture semicircular or crescent-shaped, rictal bristles strong. Wing moderate, rounded, first quill short, fifth and sixth quills longest, tail moderate, wide, legs short and rather slender, scales on tarsi confluent or obscure.

Belonging strictly to this group I have seen *T. gularis* (Horsfield) of Java, *T. sulphuratus* (Müller) of Borneo, *T. barbatus*, Temm., *T. olivaceus*, Swains. *T. flaviventris*, Smith, *T. calurus*, Cassin, and *T. simplex*, Hartlaub, of Africa, and several other Asiatic species. All these have the bill strong and curved, and several of them have the feathers of the head broad, somewhat lengthened and probably erectile. Hairs on the back of the neck frequently long and conspicuous.

78. Trichophorus chloronotus, nobis.

Strictly of the same group as *T. gularis*, Horsfield, and *T. calurus*, Cassin, and resembling both, but larger. Feathers of the head broad and lengthened, bristles on the back of the neck long and conspicuous, bill strong, curved, legs and feet rather small, feathers of the lower back and rump lengthened. Tail and upper coverts bright rufous, the outer feathers edged with greenish yellow. Head above dark cinereous or plumbeous, cheeks plumbeous, every feather with a medial line of white, back, rump and wings fine olive green, tinged with yellow on the rump, quills brownish black, edged externally with the olive green of the back, under wing coverts yellowish olive. Throat white, breast cinereous (or plumbeous, nearly the same as the head above); abdomen and under tail coverts greenish yellow. Bill bluish horn color, the edges of both mandibles white, legs light brown (in dried skin). Total length about 8 to 8½ inches, wing 4¼, tail 3¾, tarsus ⅞, bill from gape 1⅛ inches.

Hab.—River Camma, Western Africa. Discovered by Mr. P. B. Duchaillu.

This large species is another of the red tailed birds like my *T. calurus*, and *T. gularis*, Horsfield, but differs entirely from those or any other that I have ever seen or found described. The feathers of the head are wide, much as in *T. barbatus*, and are lengthened, somewhat crest-like. The cinereous or plumbeous color of the breast varies in shade in different specimens, and assumes the form somewhat of a wide transverse band on the breast and upper part of the abdomen.

Several specimens are in the collection from the Camma. This is one of the largest and handsomest known species of this genus.

79. TRICHOPHORUS CALURUS, Cassin.

Trichophorus calurus, Cassin, Proc. Acad. Phila., viii. p. 158, (1856.)

Several specimens from the Camma do not differ from others formerly received from the Muni, though presenting some variations in size and the thickness of the bill. Female like the male in color, but with the feathers of the head shorter and more compact, rather smaller than the male, and with the bill weaker.

80. TRICHOPHORUS SIMPLEX, Hartlaub.

"Trichophorus simplex, Temm." Hartl. Cab. Jour. iii. p. 356.

Specimens from the Camma labelled as males are larger than as given by Dr. Hartlaub as above, and the throat is pure white. Total length about 8½ inches, wing 4⅛, tail 4 inches.

Though now first received from Mr. Duchaillu this species has been in the Acad. coll. for about twenty years, having been received in Dr. Mac Dowall's collection from St. Paul's river. I have regarded it as *Ixos inornatus*, Fraser, erroneously as it now appears from the statements of authors, but rather difficult to determine from the description of the latter. This bird does assuredly strongly approximate to typical *Ixos* both in form and color.

GENUS XENOCICHLA, Hartlaub, Orn. W. Afr. p. 86.

Type *X. syndactyla* (Swainson). Bill strong, straight, rather wide at base, compressed in its terminal half, type of upper mandible rather abruptly curved or hooked, gonys ascending, rictal bristles strong. Wing moderate, fifth and sixth quills longest, tail moderate or rather long, legs and feet moderate or rather slender, but larger than in *Trichophorus*, scales on thetarsi hardly observable. Outer toe united to the middle toe nearly or quite to the last joint.

The main distinction of this genus from the preceding is in the bill, which, instead of being wide and curved, is straight and compressed, and with the gonys strongly ascending to the tip, and the union of the outer and middle toe is also a strong character. This group is much more rapacious and shrike-like in its characters than the preceding. Belonging to this group I have seen *X. syndactyla* (Swainson), *X. canicapellus* (Hartlaub), *X. notatus* (Cassin), and *X. tricolor* (Cassin).

81. XENOCICHLA SYNDACTYLA, (Swainson).

Dasycephala syndactyla, Swains. B. of W. Afr. i. p. 261, (1837.)
Trichophorus syndactylus, (Swains.) Hartlaub.

This large and handsome species is in the collection from the Ogobai. It is the most *shrike-like* and rapacious species of this group that I have seen, and both generically and specifically is strongly characterized.

Large, bill straight, compressed. Tail and upper coverts bright rufous, upper parts dark olive, outer edges of quills with a tinge of rufous, under parts greenish yellow, palest on the throat, the green more distinct on the breast and sides. Total length about 9½ inches, wing 4½, tail 4 inches. Outer united to the middle toe to the last joint, or for about two thirds of its length.

Several specimens from the Ogobai river.

82. XENOCICHLA NOTATA, (Cassin.)

Trichophorus notatus, Cassin, Proc. Acad. Philada. 1856, p. 159.

From the Camma, and formerly from the Moonda and Muni rivers. Easily distinguished by the large yellow spot in front of the eye, which is the color also of the under parts of the body, tinged with green on the breast and sides. Upper parts yellowish olive green, not so dark as in the preceding. Tail olive green, nearly the same as other upper parts, four outer feathers on each side, with large pale yellow spots at their tips, under wing coverts pale yellow. Total length about 7½ inches, wing 3¾, tail 3½ inches. Outer toe united to the middle for about half its length. Female smaller and with the bill shorter, but with the colors very nearly as in the male.

83. XENOCICHLA TRICOLOR, (Cassin.)

Trichophorus tricolor, Cassin, Proc. Acad. Philada. 1857, p. 33.

From the Camma and formerly from the Muhi river. Smaller than either of the preceding two species. Tail and its upper coverts dark chestnut, slightly tinged with greenish, entire upper parts olive green, under parts greenish yellow, clearer on the throat and more shaded with green on the breast and sides, exposed ends of secondaries having a tinge of rufous or chestnut like the tail. Total length about 6¼ inches, wing 3, tail 3 inches. Outer toe united to the middle slightly beyond the first joint. Female smaller than the male but similar in colors.

84. HEMIXOS SERINUS, (Verreaux.)

Criniger serinus, Verr. Cab. Jour. iii. p. 105, (1855, March.)

Criniger xanthogaster, Cassin, Proc. Acad. Philada. 1855, p. 327 (April.)

Specimens from the Camma and formerly from the Moonda. This bird is exactly the same genus to me as *Criniger ictericus,* Strickland, and another species labelled in the Acad. Coll. " *T. indicus,* Ceylon." Sexes alike.

85. HEMIXOS INDICATOR, (Verreaux.)

Criniger indicator, Verr. Cab. Jour. iii. p. 105, (March, 1855.)

Trichophorus leucurus, Cassin, Proc. Acad. Philad. 1855, p. 328, (April.)

This is a very bad *Hemixos,* but a worse *Criniger* or *Trichophorus.* It is a heavy and strong bird with the bill wider and thicker and the tail shorter than in either of the genera mentioned. It is for me the type of a generic or sub-generic group approaching *Cossypha* and *Geocichla* in form, but different in color.

Specimens from the Camma.

86. ANDROPADUS LATIROSTRIS, Strickland.

Andropadus latirostris, Strick. Proc. Zool. Soc. London, 1844, p. 100.

Frazer, Zool. Typ. Birds, pl. 35, (young.)

Bill and feet pale colored, and under mandible almost entirely white in both adult and young. Under wing coverts yellowish olive, fifth quill longest. Throat with a line on each side of pale yellow, very distinct in the adult, and generally to be traced in the young ; entire upper parts dark olive, upper tail coverts and tail greenish brown. Middle of throat and breast olive, abdomen pale greenish yellow, tibiæ and under tail coverts reddish olive. Quills edged internally with dull white. Bill wide, depressed, serrations in upper mandible distinct. The young bird frequently has the wings tinged with the same reddish brown as on the tail. Total length 6¾ to 7 inches.

Specimens from the Camma and formerly from the Muni.

87. ANDROPADUS GRACILIROSTRIS, Strickland.

Andropadus gracilirostris, Strick. Proc. Zool. Soc. London, 1844, p. 100.

Bill and feet always dark horn color. Under wing coverts and inner edges of quills dark ochre yellow. Entire upper parts yellowish olive, under parts greenish cinereous, tibiæ and under tail coverts pale rufous. Bill narrower and more slender than in the preceding. Total length about 7 inches. Serrations in the upper mandible not numerous but distinct.

From the Camma and formerly from the Moonda.

88. ANDROPADUS VIRENS, Cassin.

Andropadus virens, Cassin, Proc. Acad. Philada. 1857, p. 34.

Smaller than either of the preceding, and more nearly related to the typical *A. importunus*, of southern Africa. Bill and feet brownish horn color, the latter lighter. Under wing coverts pale greenish yellow, inner edges of quills very pale reddish white. Entire plumage olive, paler beneath, middle of abdomen yellow. Upper tail coverts and tail greenish brown. Total length about 6¼ inches.

This appears to be the most abundant species of Equatorial Africa, having been received in all of Mr. Duchaillu's collections.

89. ANDROPADUS CURVIROSTRIS, nobis.

About the size of *A. gracilirostris* and *latirostris*. Bill rather narrow, curved, serrations in upper mandible distinct. Under wing coverts pale greenish yellow. Upper parts olive, darker on the head, upper tail coverts and tail reddish brown, under parts lighter olive, tinged with reddish brown on the breast and sides and inclining to yellow on the abdomen. Quills dark brown, edged outwardly with olive, and on their inner edges with pale greenish yellow. Bill and feet bluish horn color, edges of both mandibles white. Total length about 6¾ inches, wing 3, tail 3 inches.

Hab.—River Camma, Western Africa. Discovered by Mr. P. B. Duchaillu.

This bird has the bill wider than in *A. gracilirostris*, and not so wide nor so strong as in *A. latirostris*, and more curved than in either. I have heretofore regarded it as the young of the former, but it appears to be a distinct species. Numerous specimens from the Camma and formerly from the Muni.

90. IXOS ASHANTEUS, Bonaparte.

Ixos ashanteus, Bonap. Consp. Av. i. p. 266.

Specimens from the Camma, and received in small numbers in several other of Mr. Duchaillu's collections.

91. IXONOTUS GUTTATUS, Verreaux.

Ixonotus guttatus, J. and E. Verreaux, Rev. et Mag. Zool. 1851, p. 306.

Evidently not an uncommon bird in Equatorial Africa. From the Camma, and formerly in other collections from Mr. Duchaillu.

GENUS PYRRHURUS, nobis.

Bill rather wide at base, upper mandible curved towards the end and distinctly notched, base with about 4 or 5 pairs of long and rather strong bristles. Wing rather long, first quill short, fifth longest, legs and feet strong, claws large, tail long, wide, rounded. Feathers of the head in front stiff and scale-like. Type *Phyllastrephus scandens*. Swainson.

92. PYRRHURUS PALLESCENS, (Hartlaub.)

Trichophorus pallescens, Hartl. Orn. W. Afr., p. 86, (1857.)

In the collection from the Ogobai are several specimens which agree so completely with Dr. Hartlaub's very careful description, cited above, that I cannot avoid the conclusion that they are the species intended, though he gives the locality of his specimens as "Gambia." The present specimens are precisely of the same generic form as *Phyllastrephus scandens*, Swainson, and resemble that species exceedingly in color also, but are smaller, as will be seen by Dr. Hartlaub's description, and constantly differ in the color of the under parts of the body and the under wing coverts. Specimens of *P. scandens* are in the Acad. coll., labelled in the handwriting of Mr. Jules Verreaux.

With undoubted specimens also before me of *Phyllastrephus capensis* from the Cape of Good Hope, it is very palpable that these birds are not of the same genus. In fact *P. capensis* has short wings, and *P. scandens* the wings long, and in other points of structure these birds are quite different, though belonging to the same group of Thrushes, and allied to *Ixos* and *Andropadus.*

93. PYRRHURUS LEUCOPLEURUS, (Cassin.)
Phyllastrephus leucopleurus, Cassin, Proc. Acad. 1855, p. 328.

Several specimens from the Camma do not vary materially from my description, as cited above. The affinities of this bird are more nearly to the preceding and *P. scandens* than to any African birds with which I am acquainted, but there are Asiatic species also to which it is related. The bristles at the base of the bill in the present bird are smaller than in the preceding.

This bird approximates to Asiatic birds, very confusedly given by authors as species of the genera *Brachypus, Napothera, Trichophorus* and others. It quite considerably resembles a species received from the Leyden Museum, labelled "*Trichophorus striolatus,* Müller, Java," but is larger and has the tail longer, though it is apparently of the same genus. There are also other birds in the Acad. coll. variously estimated generically, but of the same group as the present species. I arrange it here provisionally, until I can find out further.

94. MUSCIPETA FLAVIVENTRIS, Verreaux.
Muscipeta flaviventris, Verr. Cab. Jour. iii. p. 103, (1855.)
Muscipeta tricolor, Fraser?

A very beautiful species, varying much at different ages, but recognizable by the peculiar rich red orange or bay of the under parts. In the adult the plumage on the *upper* parts of the body is orange yellow at the base of the feathers, and on the rump the feathers are of the same color as the under parts, but tipped with bluish ashy. With some displacement of the feathers the rump might readily be supposed to be of the same color as the under parts. Specimens from the Camma and from the Moonda are nearly all young.

95. MUSCIPETA MELAMPYRA, Verreaux.
Muscipeta melampyra, Verr.

Specimens in several of Mr. Duchaillu's collections. From the Camma.

96. MUSCIPETA SMITHII, Fraser.
Muscipeta Smithii, Fraser, Proc. Zool. Soc. London, 1843, p. 34.

Another very handsome species recognizable without difficulty from the description as cited. This bird bears relations to both *Muscipeta nigriceps* (Hartlaub)* and *M. flaviventris,* Verreaux, and in fact looks like a specimen of the former, with the tail of the latter appended. Head glossy bluish black, back, rump, wing coverts and entire under parts fine orange-rufous, quills and tail brownish black, with a strong tinge of bluish ashy on the outer webs of the feathers. Total length about 7¾ inches. The black of the head extends further on the neck in this species than in *M. nigriceps,* and the color of the tail is entirely different, being fine reddish or chestnut orange in the latter.

97. MUSCIPETA MELANOGASTRA, Swainson?
Muscipeta melanogastra, Swains. B. of W. Afr. ii. p. 55, (1837)?

Specimens which I refer provisionally to this species are not adult, and but few only have been received from Mr. Duchaillu. With numerous specimens of *M. melanogastra* in various stages of plumage, from the Gambia in the Acad. Coll., I cannot avoid suspecting that the adult of the birds in the present collection would be different. The young are much alike in general characters.

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* MUSCIPETA NIGRICEPS, (Hartlaub.)
"Tchitrea nigriceps, Temm." Hartl. Orn. W. Afr. p. 91.
Velvet-headed Flycatcher, Lath. Gen. Hist. vi. p. 198.

Both sexes of this species are in the Acad. coll., having been received in Dr. Macdowell's collection from St. Paul's river. Head and throat glossy purplish black, quills dark brown, all other parts of the plumage, including tail, rich orange rufous, inclining to chestnut on the breast, tail with the middle feathers much the longest in the male. Female with the tail short, head and throat dark brown, all other parts of the plumage dull orange rufous. Total length, ♂ about 9½ inches, ♀ about 6 inches.

98. MUSCIPETA SPECIOSA, nobis.

Generally resembling *M. melampyra*, Verreaux, but smaller and with the tail long, and having a white longitudinal stripe on the wing like *M. melanogastra* and *M. rufiventris*. Tail long, with the two middle feathers much the longest, others graduated, wing moderate, fifth quill longest, bill stout, rather wide and thick but not so long as usual in this genus, bristles at base of both mandibles conspicuous. *Upper tail coverts* in adult glossy black. Head, neck and breast glossy black with a green lustre, abdomen and *under tail coverts* dark bluish ashy or nearly black, wing coverts and quills black, greater wing coverts widely edged with white, secondary quills widely edged externally with white, (forming a conspicuous white spot on the wing coverts, continued in a longitudinal stripe on the quills). Under wing coverts dark ashy, nearly black, same as the under parts of the body. Upper parts of body fine rufous chestnut, shorter quills edged with rufous chestnut. Tail rufous, rather lighter than the back, all the feathers edged towards the end with brownish black, and the middle feathers brownish black along their shafts and tipped with that color. Bill and feet black.

Total length from tip of bill to end of tail about 9 inches, wing 3⅛, tail 6, middle tail feathers exceed the next pair by 2½ inches, bill from gape ¾ inch.

Hab. Camma river, Western Africa. Discovered by Mr. P. B. Duchaillu.

This is a species of the same general appearance as *M. melanogastra*, *holosericea*, *rufiventris* and others, and resembling in colors, especially of the under parts of the body, *M. melampyra* as stated above. In *M. melampyra*, the under tail coverts are bright rufous, and it has no white stripe on the wing. In the present species, the under tail coverts are dark ashy, exactly the same as the abdomen, and the white spot and stripe on the wing are very conspicuous. The *upper tail coverts*, especially the longest of them, next to the tail are *lustrous greenish black* in the present bird, which character distinguishes it from all other species with which I am acquainted. There is no other known African species that has the under tail coverts dark cinereous, except *M. senegalensis*, Lesson, which, however, only generally resembles the present bird, so far as can be gathered from the descriptions.

99. MUSCIPETA DUCHAILLUI, nobis.

Generally resembling the Asiatic *M. paradisi*, (Linnæus) but smaller and with the long feathers of the tail white in both sexes. Crested, bill wide, somewhat depressed, bristles at the base of both mandibles long and conspicuous, wing moderate, fifth quill longest, middle feathers of the tail long, others graduated. Male, adult.—Back, rump and upper tail coverts *reddish chestnut*, head and breast shining greenish black, abdomen dark ashy. Quills brownish black, greater wing coverts and tertiary quills widely edged with white, forming a very conspicuous white longitudinal stripe on the wing, under wing coverts dark ashy (same as abdomen) middle tail feathers white, with their shafts black at the base, outer tail feathers brownish black, several of the longer edged with white on their inner webs. Female, adult.—Back, rump, upper tail coverts and tail *snowy white*, the shafts of the tail feathers for about half the length of the middle feathers and throughout the others, black. Crested, head and breast shining greenish black, (as in the male) abdomen and under tail coverts white, the former mixed and striped with black on the flanks, quills brownish black, greater coverts and outer edges of tertiaries white, under wing coverts white. Bill and feet ashy bluish brown. Young ♂. Upper parts white as in the female, but with longitudinal stripes of black, outer tail feathers brownish black, edged with white, abdomen dark ashy, nearly black.

Total length about 14 inches, wing 3¼, tail 10, middle feathers exceed the others by 6 inches.

Hab.—Camma river, Western Africa. Discovered by Mr. P. B. Duchaillu.

This is one of the most remarkable birds yet discovered by Mr. Duchaillu, and is also one of the handsomest species of Flycatchers yet known to inhabit Western Africa. In general characters, this bird resembles the well known Asiatic *Muscipeta paradisi*, and, as in that species, the male is chestnut colored on the upper parts of the body, and the female is white. The present bird has also relations to *M. mutata*, and others of Southern and Eastern Africa, but is quite different.*

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* The following species of *Muscipeta* are in the Museum of this Academy.

Asiatic.

1. Muscipeta paradisi, (Linnæus) Le Vaill. Ois d'Afr. iii. pl. 144, 145.
2. Muscipeta affinis, (Hay.)
3. Muscipeta rufa, (G. R. Gray,) Gray's Genera, i. pl. 64.
4. Muscipeta leucogastra, Swainson, Flycatch. Nat. Lib., pl. 24.
5. Muscipeta principalis, Temm., Faun. Jap. Birds, pl. 17.
6. Muscipeta cyaniceps, Cassin, Voy. Vincennes, Birds, pl. 9, fig. 1.

African.

7. Muscipeta cristata, (Gmelin,) Le Vaill. Ois d'Afr., iii. pl. 142, 143.

Numerous specimens from the Cape of Good Hope, and one specimen from "Nova Redonda, Western Africa." The latter collected and presented by Dr. A. A. Henderson, Surgeon, U. S. Navy.

8. Muscipeta borbonica, (Gmelin.)
9. Muscipeta melanogastra, Swainson.

Specimens from Gambia and others from Equatorial Africa, received from Mr. Duchaillu. The latter I assign to this species with some hesitation.

10. Muscipeta rufiventris, Swainson, B. of W. Afr., ii. pl. 4.
11. Muscipeta mutata, (Gmelin,) Le Vaill. Ois. d'Afr., iii. pl. 148.
12. Muscipeta holosericea, (Temminck) Le Vaill. Ois. d'Afr. iii. pl. 147.
13. "Muscipeta Gaimardi, Madagascar." Label in Rivoli Collection.

The last three names I regard as possibly applicable to one species only, in stages of plumage analogous to those of *M. paradisi*, and of my *M. Duchaillui*, but I advance this as an opinion only, at present. These three are all labelled in the Acad. Coll. as from Madagascar. The last seems to be *Tchitrea Gaimardi*. Lesson, Traité, i. 386, which is stated to be from New Guinea, an error corrected by M. Pucheran, in Arch. du Mus. Paris, vii. p. 372.

14. Muscipeta Ferreti, (Guerin), Ferret et Galinier, Voy. Abyssinia, Ois. pl. 8. Specimens of both sexes from Abyssinia.
15. Muscipeta flaviventris, (Verreaux).
16. Muscipeta melampyra, (Verreaux).
17. Muscipeta Smithii, Fraser.
18. Muscipeta nigriceps, (Hartlaub).
19. Muscipeta speciosa, Cassin.
20. Muscipeta Duchaillui, Cassin.

Of these species there are several subgeneric groups, one of the most distinct of which is composed of *M. flaviventris*, *Smithii*, and *melampyra*. In addition to the species here given, there are various others in the Acad. Coll., nearly related, if not actually entitled to be included in the genus *Muscipeta;* for instance, *Muscicapa pyrrhoptera*, Temm., which is placed by Bonaparte in the genus *Philentoma*, Eyton, but with doubtful propriety as a congener of *P. velatum* and *Muscicapa cyanomelas*. For me, the first three species of *Philentoma*, as arranged by Bonaparte, (Consp. Av. i. p. 314,) belong to three different genera. The fourth species I do not know.

To this beautiful species, I have great pleasure in applying the name of Mr. Duchaillu, who, in the three years past, during which he has been in Africa, has fairly earned the distinction of being the most successful zoological traveller of the present time, and who has, in ornithology especially, made very important discoveries.

100. Trochocercus nitens, nobis.

Of the same generic group as *Muscicapa cyanomelas*, Vieill. Le Vaill. Ois. d'Afr. iv. pl. 151, and in some measure resembling that species. Crested, bill smaller and more narrow than in typical species of *Muscipeta*, wing moderate, fifth quill longest, tail moderate, bristles at the base of both mandibles strong, and nearly as long as the bill.

♂. Head, breast, and entire upper parts glossy bluish black, which is also the color of the wings and tail. Abdomen and under tail coverts light cinereous, very pale or nearly white next to the black color on the breast, under wing coverts white, bill and feet bluish gray.

♀. Top of head (or crest) only glossy black as in the male, back and other upper parts dark cinereous, (without lustre,) wings and tail ashy black. Entire under parts light cinereous, darker on the throat and breast, and very pale on the abdomen, under wing coverts light ashy, nearly white. Total length, ♂, about 5¾ inches, wing 2½, tail 2¾ inches. ♀ slightly smaller.

Hab.—Camma river, Western Africa. Discovered by Mr. P. B. Duchaillu.

This is a second species of the same group to which belongs *Muscicapa cyanomelas*, Le Vaill. Ois. d'Afr. iv. pl. 151, as stated above, but is a very distinct and well marked species, entirely without the white scapulars and tertiaries which so strongly mark that bird, and are well represented in Le Vaillant's plate cited above. In the male, the head and breast and entire upper parts of the body, including the wing coverts and shorter quills, are lustrous bluish black, changing to greenish according to the light. The abdomen is clear ashy, very pale next to the black of the breast, and there almost assuming the form of a transverse narrow band of ashy white.

Several specimens of both sexes of this interesting little bird are in the collection from the Camma and Rembo rivers.

101. Trochocercus ——— ?

Several specimens of young birds in the collection from the Camma seem to indicate a third species of this group larger than either *T. cyanomelas* or *T. nitens*. Young of both sexes resemble the females of both the species just mentioned, but are of darker cinereous, and like them have the crest only black. The bill is larger and more depressed. I do not regard it as expedient to propose a new specific designation in this difficult family, without having adult specimens.

102. Bias musicus, (Vieillot.)

Platyrhynchus musicus, Vieill. Nouv. Dict. xxvii. p. 15.
Myiagra flavipes, Swains. Flyc. Nat. Lib. p. 255, 308.

Specimens from the Camma and formerly from the Moonda. Young ♂. Like the female, but with the entire plumage mixed with black feathers.

103. Artomyias fuliginosa, Verreaux.

Artomyias fuliginosa, J. & E. Verreaux, Cab. Jour. 1855, p. 104, (March.)
Butalis infuscatus, Cassin, Proc. Acad. Philada. 1855, p. 326, (April.)

From the Camma and formerly from the Moonda and Cape Lopez.

104. Platystira melanoptera, (Gmelin.)

Muscicapa melanoptera, Gm. Syst. Nat. i. p. 939, (1788.)
Jard. and Selb. Ill. Orn. i. pl. 9.

Numerous specimens in all of Mr. Duchaillu's collections.

105. Platystira leucopygialis, Fraser.

Platystira leucopygialis, Fras. Proc. Zool. Soc. London, 1842, p. 142.
Platystira castanea, Fras. ut sup. p. 141
Frazer Zool. Typ. Birds, pl. 34.

From the Camma and Ogobai.

106. Muscicapa grisola, Linnæus.
Muscicapa grisola, Linn. Syst. Nat. i. p.
Butalis Africana, Bonap. Comptes Rendus, 1854, p. 652?
Gould, B. of Eur. pl. 65. Naumann, B. Germ. pl. 64.

Several specimens from the Ogobai and Rembo, not distinguishable from the European bird, but are not in fully adult plumage. In the African specimens the bill is smaller than usual in this species from Europe, but they do not appear to be specifically distinct.

107. Muscicapa, ———?

A second species of typical *Muscicapa*, in the collection from the Camma, but which I cannot identify with any species or description with which I am acquainted. Adult ♂. Upper parts clear bluish-ashy, lighter on the rump, and with longitudinal lines of brownish black on the head. Throat and abdomen white, breast pale ashy, nearly the same as the back, under wing coverts ashy white, quills and tail brownish black. An obscure line of ashy white in front of the eye. Bill and feet black. Young ♂. Upper parts cinereous, many feathers, with large terminal spots of dull yellowish, under parts dull white, with spots and edging of brownish black. Tail black, narrowly tipped with white.

Total length about 5 inches, wing 2¾, tail 2¼ inches.

108. Muscicapa epulata, (Cassin).
Butalis epulatus, Cassin, Proc. Acad. Philada. 1855, p. 326.

Specimens show some difference in the shade of ashy of the upper parts, but appear to be identical. In the more adult the lower mandible and the feet are light colored or nearly white in the dried skin. From the Camma.

109. Erythrocercus McCallii, (Cassin).
Pycnosphrys McCallii, Cassin. Proc. Acad. Philada. 1855, p. 326.

A single specimen from the Camma, not different in any respect from that formerly received from the Moonda.

110. Hyliota violacea, Verreaux.
Hyliota violacea, Verreaux, Rev. et Mag. Zool. 1851, p. 308.

From the Camma and formerly from the Moonda.

111. Fraseria ocreata, (Strickland).
Tephrodornis ocreatus, Strickl. Proc. Zool. Soc. London, 1844, p. 102.
Fraser, Zool. Typ. Birds, pl. 36.

Both sexes from the Camma. The dark edgings of the plumage of the breast varies in different specimens, in some extending to the sides and abdomen, in others nearly obsolete. Sexes nearly alike in colors, female smaller.

112. Fraseria cinerascens, Hartlaub.
"Stiphrornis cinerascens, Temm. Mus. Lugd." Hartl. Orn. W. Afr. p. 102.

This species much resembles the preceding, but is smaller, and can be easily distinguished by the white spot in front and over the eye, which is present in both sexes at all ages. Sexes very nearly alike, but the female and young male generally have the breast and flanks strongly tinged with dull fulvous or ochre color. From the Camma and Ogobai.

113. Parisoma melanurum, nobis.

About the size of *P. subcaeruleum*, (Vieill.) Le Vaill. Ois. d'Afr. iii. pl. 126. Bill rather thick, upper mandible distinctly notched, under mandible with the ridge ascending, wing moderate, first quill short, fourth longest, tail rather long, legs rather long. Middle six feathers of the tail black, outer two white, intermediate black, tipped with white. Entire plumage cinereous, darker on the head and upper parts of the body, lighter on the throat and breast, and nearly white on the abdomen. An obscure white line in front of the eye. Under wing coverts ashy white, under tail coverts pale fulvous. Quills brown edged externally with ashy white. Bill light corneous, under mandible white at base, tarsi light bluish. Young ♂. Entire under parts ashy, many of the feathers edged with light rufous, under tail coverts pale rufous, upper parts darker ashy, wing coverts and quills edged with pale rufous. Total length about 5¼ inches, wing 2⅝, tail 2½ inches.

Hab. Camma river, Western Africa. Discovered by Mr. P. B. Duchaillu.

About the same size as the South African *Parisoma*, mentioned above, but with the bill thicker and longer. In the young bird the under tail coverts are pale rufous, which color becomes more indistinct, and assumes a fulvous shade in more advanced age. Several specimens from the Camma and Rembo. Sexes alike.

114. PARISOMA OLIVASCENS, nobis.

About the size of the preceding, or slightly larger; bill shorter and thicker, tail rather long. Entire upper parts ashy olive, wings and tail olive brown, quills edged externally with pale yellowish ashy, and internally with white. Throat, and under tail coverts white, breast and abdomen greenish ashy, paler on the latter, under wing coverts white. Upper mandible bluish corneous, under mandible yellowish white, legs pale colored. Total length 5½ inches, wings 2¾, tail 2½ inches.

Hab. Camma river, Western Africa. Discovered by Mr. P. B. Duchaillu.

This bird is of the same general form as the preceding, but has the bill stronger, and the colors of the plumage are entirely different. The tail in the present bird is greenish brown, the outer feathers more distinctly edged with ashy olive, very nearly uniform with the upper parts of the body. One specimen only is in the collection from the Camma, and is labelled as a male. Both the species here described have the bills longer and thicker than ***P. subcaeruleum***.

Genus HYPODES, nobis.

Allied to *Parisoma*, but with the general form shorter and stronger. Tail short, bill thick, rather wide at base, upper mandible distinctly notched at the tip, bristles at base of the upper mandible distinct, wing moderate or rather long, first quill short, third and fourth longest and nearly equal, legs and feet moderate, or rather slender. Type *Eopsaltria cinerea*, Cassin.

115. HYPODES CINEREA, (Cassin).

Eopsaltria cinerea, Cassin, Proc. Acad. Philada. 1856, p. 253.

This little bird is allied to the preceding two species, but is generically distinct, and has the tail short, while in those the tail is rather unusually long. In my judgment this bird and *Parisoma* are not distant relations of *Vireo* and *Eopsaltria*.

116. CAMPEPHAGA NIGRA, Vieillot.

Campephaga nigra, Vieill.

Le Vaill. Ois. d'Afr. iv. pl. 165.

There is a constant difference in the metallic lustre of different specimens, almost inclining me to the opinion, that they are two species. Both are entirely black, and about the same size, but the lustre of one is green, and of the other rich purple and violet. The former is strictly identical with South African specimens in Acad. Coll.

From the Camma, and formerly from the Muni.

117. LOBOTOS TEMMINCKII, Hartlaub?

Lobotos Temminckii, Hartl. Orn. W. Afr. p. 99?

Ceblepyris lobatus, Temm. Pl. Col. 279, 280?

A single specimen labelled as a young male, is either this species or an undescribed bird. It much resembles the figure of the female given by Temm. in Pl. Col. 280, but has the entire head cinereous, darker on the top of the head, lighter and nearly white on the throat. Upper part of body yellowish olive, under parts fine yellow, quills dark brown, edged internally with yellow, tail olive, external feathers with their outer webs yellow. Total length 7¾ inches.

118. CEBLEPYRIS AZUREA, (Cassin.)

Graucalus azureus, Cassin, Proc. Acad. Philada. 1851, p. 348.

Two specimens in the collection from the Camma, and so far as I am informed the only known specimens except that formerly received from Dr. Macdowell, and described by me as above. It is with much gratification that I record the second occurrence of this species, which is quite peculiar amongst the African birds of this group, and is strongly distinguished by its uniform blue plumage. The present specimens are fully adult, being rather larger than that described by me, and have the quills uniform clear black, without the white transverse lines at the end, which are in the original specimen, and seem to mark a younger bird. Total length about 8 inches. The general appearance of this bird is not unlike that of the young or immature plumage of *Irena puella* of Asia.

119. DICRURUS CORACINUS, Verreaux.

Dicrurus coracinus, J. & E. Verreaux, Rev. et Mag. Zool. 1851, p. 311.

From the Camma and Ogobai, and strictly identical with specimens from Mr. Verreaux, in the museum of this Academy,

120. DICRURUS ATRIPENNIS, Swainson?

Dicrurus atripennis, Swains. B. of W. Afr. i. p. 256?

Several specimens which I doubtfully refer to this species. It is smaller than the dimensions given by Swainson as above, the total length being about 8 inches, but is evidently nearly allied, if not identical with his species. This bird has the tail but very slightly forked, and bears relations also to my *D. aculeatus* and to *D. Ludwigii*, Smith, of Eastern and Southern Africa, both of which are now before me. *D. atripennis* is not in the Academy collection.

121. SIGMODUS RUFIVENTRIS, Bonaparte.

Sigmodus rufiventris, Bonap. Rev. et Mag. Zool. 1853, p. 441.

Several specimens from the Ogobai and formerly from the Moonda. Sexes alike, except that in the female the head above is clear white, without the tinge of cinereous generally to be seen in specimens. This species is rather smaller and quite distinct from *S. caniceps*. Temminck.

122. LANIARIUS CRUENTUS, (Lesson.)

Vanga cruenta, Less. Belanger's Voy. Zool. p. 256, (1834.)

"Harcolestes hypopyrrhus, Bonaparte," Verreaux, Rev. et Mag. Zool. 1855, p. 419.

Lesson, Cent. Zool. pl. 65.

Very fine specimens of this beautiful species are from the Ogobai and Rembo and formerly from the Moonda. The female is similar to the male in general characters, but is rather smaller and has the colors less distinct.

123. LANIARIUS CHLORIS, (Dumont.)

Lanius chloris, Dumont, Dict. des Sci. Nat. xi. p. 226, (1826.)

Malaconotus Peli, Bonaparte, Consp. Av. i. p. 360, (1850.)

Laniarius lepidus, Cassin, Proc. Acad. Philada. vii. p. 327, (1855.)

The description of *Lanius chloris*, as cited above, is not sufficient to identify it with this or any other species. In applying this name to the bird now before me, I rely entirely on the conclusion of Dr. Hartlaub, in Orn. W. Afr., p. 109, and necessarily disregarding the statement made by the Prince Bonaparte that *L. chloris* is a second species of the genus *Ixonotus*, Verreaux (Comptes Rendus, Acad. Paris, 1854, p. 533.)

From the Camma, and received in all the collections from Mr. Duchaillu.

124. DRYOSCOPUS AFFINIS, G. R. Gray.

Dryoscopus affinis, G. R. Gray, Ann. & Mag. Nat. Hist. 1837, p. 489.

Specimens from the Ogobai and others from the Moonda, that I cannot distinguish from others in the Acad. Coll. from Zanzibar.

125. DRYOSCOPUS MAJOR, (Hartlaub.)
Telophonus major, Hartl. Rev. Zool. 1848, p. 108.
Trans. Nat. Hist. Soc. Hamburg, 1848, pl. 5.

Specimens of both sexes from the Camma.

126. DRYOSCOPUS CARBONARIUS, (Cassin.)
Laniarius carbonarius, Cassin, Proc. Acad. Philada. 1851, p. 347.
Telophonus leucorhynchus, Hartlaub, Rev. Zool. 1848, p. 108 ?
Trans. Nat. Hist. Soc. Hamburg, 1848, pl. 6 ?

Though the names here given seem to be regarded as certainly synonymous by very reliable ornithologists, I have never been able to reconcile that conclusion with the fact that both sexes of my *D. carbonarius* have the bill black. In *T. leucorhynchus*, the bill of the male is white, and that of the female black, and the measurements given as above, and elsewhere, with his usual accuracy, by Dr. Hartlaub, are smaller than in specimens of my species.

There are, in Mr. Duchaillu's collections, numerous specimens of *L. carbonarius* of both sexes, and very similar in all their characters, but previous to the arrival of the present collection from the Camma, I had never seen a specimen with the bill light colored, or of any other color than black. In this collection, however, there are two specimens evidently not in mature plumage, one of which, labelled as a male, has the bill varied with dull brownish black and pale yellowish white, and showing a tendency to become either white or black, but impossible to determine which. These two specimens are smaller than those of *L. carbonarius*, being very nearly the size given by Dr. Hartlaub, and have the plumage more strongly tinged with brown as represented in his plate cited above. My opinion is, at present, that the two species are distinct.

From the Camma and Ogobai, and formerly from the Moonda.

127. CHAUNONOTUS SABINEI, (J. E. Gray).
Thamnophilus Sabinei, J. E. Gray, Zool. Misc. p. 7, (1842).
Hapalophus melanoleucus, Verreaux, Rev. et Mag. Zool. 1851, p. 312.
Jard. and Selby, Ill. Orn. n. s. pl. 27.

From the Camma, and formerly from the Muni and Moonda.

128. TURDIROSTRIS FULVESCENS, nobis.

Of the same genus as "*Myiothera philomela*, Temm. Borneo," and very nearly related to "*Myiothera inornata*," "*Trichostoma umbratile*," and "*Trichostoma celebense*," of the Acad. Coll. and generally resembling those species in colors, but larger than either of them. Bill rather large, wing moderate, rounded, fifth quill longest, tail moderate, rounded, legs rather long, feathers of the back long, soft, bristles at the base of the bill strong. Head above dark ashy brown, cheeks ashy, throat ashy white. Upper parts of body reddish-brown, with a tinge of olive on the back, and becoming clear dark ferrugineous on the rump and upper tail coverts. Under parts of body dull ashy white, much tinged with dull ochraceous or fulvous on the breast and sides. In some specimens the entire under parts are dull reddish fulvous. Quills dark brown, edged externally with the same color as the back, tail dark chestnut brown. Bill with the upper mandible horn color, under mandible yellowish white, legs light brownish. ♀. Smaller, and with the plumage more strongly tinged with ferrugineous on the upper parts, throat ashy white, under parts of body ashy white in some specimens, dull fulvous in others.

Total length, ♂, about 6 inches, wing 3, tail 2⅜ inches. ♀ Total length about 5¾, wing 2¾, tail 2½ inches.

Hab. River Camma, Western Africa. Discovered by Mr. P. B. Duchaillu.

To me this bird is exactly the same genus as a species in the Acad. Coll. labelled in Europe, "*Myiothera philomela*, Temm. Borneo," and is nearly related to others as stated above. Its colors much resemble those of the species just mentioned, and also of "*Trichostoma umbratile* and *celebensis*," of which very indifferent figures are given in Jardine's Cont. Orn. for Nov. 1849. The tails in these two birds are not unusually short as represented in the plate alluded to, and in other respects the figures are scarcely recognizable with the original specimens before me. These species are included in the genus *Turdirostris*, Hay, Bonap. Comp. Av. i. p. 217.

The present bird presents considerable diversity in the shade of colors, and especially in the greater or less prevalence of ferrugineous or dark fulvous on both the upper and under parts of the body. So far as I know, it is the first species yet ascertained to inhabit Western Africa, of a group of birds quite numerous in the islands of the Malay Archipelago, at about the same latitude of Mr. Duchaillu's operations, or within a few degrees of the Equator. In fact, species from equatorial Africa, similar to others in the equatorial Asiatic Islands, have now been discovered to such extent as to be quite remarkable.

With this species I conclude the *Dentirostres* of the present very interesting collection, and hope to continue this Catalogue without intermission next month.

In accordance with the by-laws, the following members were elected on the Standing Committees for the present year.

1. *Ethnology*, J. A. Meigs, S. S. Haldeman, T. G. Morton. 2. *Comparative Anatomy and General Zoology*, Joseph Leidy, James M Corse, W. A. Hammond. 3. *Mammalogy*, John Le Conte, J. H. Slack, Wm. Camac. 4. *Ornithology*, John Cassin, T. B. Wlson, S. W. Woodhouse. 5. *Herpetology and Ichthyology*, Edward Hallowell, Robert Bridges, J. C. Morris. 6. *Conchology*, T. A. Conrad, W. G. Binney, W. S. W. Ruschenberger. 7. *Entomology and Crustacea*, Robert Bridges, John L. Le Conte, J. J. Brown. 8. *Botany*, Elias Durand, A. J. Brazier, Joseph Carson. 9. *Geology*, Isaac Lea, C. E. Smith, J. P. Lesley. 10. *Mineralogy*, W. S. Vaux, J. C. Trautwine, W. G. E. Agnew. 11. *Palæontology*, T. B. Wilson, Joseph Leidy, T. A. Conrad. 12. *Physics*, B. H. Rand, W. M. Uhler, Edward Tilghman. 13. *Library*, W. S. Vaux, Isaac Barton, T. B. Wilson. 14. *Proceedings*, John L. Le Conte, Joseph Leidy, W. S. Vaux, G. Scull, W. S. W. Ruschenberger.

February 1st.

Vice President BRIDGES in the Chair.

Forty members present.

A paper was presented for publication in the Proceedings, entitled Ichthyological Notices, by Charles Girard, M. D., and was referred to a Committee.

The resignation of Thomas B. Wilson, M. D., as member of the Committees on Palæontology and the Library, tendered this evening, was accepted.

On motion of Mr. Cassin, a special vote of thanks was given to Mr. James Hammill, for his handsome donation of the skeleton of a horse, received this evening.